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SECRETARY

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Corrected to 1927

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The 1926 Yearbook

The Yearbook has been prepared under the supervision of Nelson Antrim Crawford, Director of Information, with A. P. Chew as associate editor. E. C Powell gave editorial assistance.

FOREWORD

The Yearbooks, which have been published regularly from 1894 on by the United States Department of Agriculture, reach more persons than any other books on agriculture issued anywhere in the world. The bulk of their circulation is among everyday farmers. It is highly important that they be accurate, broad, interesting, and useful to the farmer. Incidentally they should have reference value to the technically trained agriculturist.

These essentials have been kept constantly in mind in the preparation of the 1926 Yearbook. The farmer knows the basic principles of his business; the typical American farmer is an intelligent farmer. He does not need to be told elementary facts.

What the farmer wants to know is the new discoveries which have been made in agriculture—results of research by scientists, experiences of farmers' marketing organizations, authentic data on quantity and quality of agricultural production. Material of this sort is presented in the present Yearbook. Up-to-date information is offered from every phase of agriculture. For the convenience of the reader, the articles are arranged in alphabetical order. Illustrations appear where they will definitely add to the usefulness of the text.

Current statistics of agricultural production are published, as usual. My annual report as Secretary of Agriculture, which appears in the volume, endeavors to interpret contemporary agricultural conditions.

The Yearbook, I believe, presents a broad and illuminating picture of agriculture to-day—a picture which not only will be of practical value to farmers but will also, I hope, add to the understanding of such members of other groups in the population as examine the volume. Subsequent Yearbooks, it is contemplated, will follow a similar plan, keeping the picture of agriculture constantly up to date.

Obviously, it is impossible to deal in comprehensive detail with every subject in one book. Those who desire further data on subjects of particular interest to them are invited to write to the specialists whose names are signed to the respective articles. The principal purpose of the department is to supply reliable information to the farmers; I want no farmer to hesitate to communicate with the department or any member of it.

W. M. JARDINE,
Secretary of Agriculture.

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Difficult Problems Persist

Even a good year, therefore, would have to be spoken of in terms of improvement rather than of full prosperity. The situation continues to present problems of heavy production and some lingering disparity between the prices of farm products and the prices of industrial goods and services. These facts must not be forgotten. On the other hand, they should not blind us to the real gain that has been made. If the Cotton Belt is the black spot in the agricultural picture for the time being, it does not darken the whole of the picture by any means.

It is impossible to appraise the condition of agriculture in a given region by considering solely the current price of the principal crop grown there. In the case of the Cotton Belt, for example, we have to set up against the present low price of cotton the fact that cotton, until the last few months, had sold at high prices since 1922. In 1922, 1923, and 1924 the South enjoyed a combination of large production and high prices. Because of that fact it is unquestionably better able to meet the present emergency than it otherwise would have been. It has more ample resources wherewith to finance the marketing of this year's crop, and is in a good position to protect itself in some measure against the worst effects of the temporary price slump.

Position of Leading Crops

It will be convenient to glance briefly at the present situation in regard to the leading crops against the background of the depression period from which we are emerging. Winter-wheat growers have harvested and marketed early an excellent crop of high quality. Wheat is not selling at as high a price this year as it was at this time last year. In parts of the spring-wheat States, where yields were reduced by drought, there is distress. Spring wheat was practically a failure in much of South Dakota and central North Dakota. Indeed, all crops suffered there. A great deal of the area seeded was not harvested. Business conditions have naturally been affected adversely. In northern and eastern North Dakota, however, the situation is much better. The Mountain States, particularly Montana, have made good progress this year in recovery from the effects of the depression. It may be said, indeed, that over the greater part of the wheat States conditions have been good for three years. In 1924 our wheat farmers produced 863,000,000 bushels, and for what they sold they received an average price of $1.28 a bushel. In 1925, with a crop of only 669,000,000 bushels, the average price received for wheat sold by farmers was $1.46 a bushel. This year high yields in many States will compensate most farmers for the drop in the price.

Corn Belt in Better Shape

In the Corn Belt conditions are now somewhat more favorable than they have been for several years. There is a tendency toward a better balance between corn production and hog production, and therefore between corn prices and hog prices. Although there is no undue surplus of corn as there was last year, there is enough of it on hand to fatten a probably increased number of pigs. It is well to bear in mind, however, that the supply of corn is still large, and that a

hog-cholera scare is reducing the number of hogs. Similar optimism is warranted in regard to the livestock industry generally. There was a lack of balance in that branch of agriculture in 1925. Corn, oats, and hay were heavy crops, while the number of animals to be fed, especially hogs, was relatively small. Livestock producers were therefore unable to take full advantage of the low price of feedstuffs. That trouble has now been fairly well corrected, and the livestock industry in general is in a stable condition. The range country has had a good year. Cattlemen have done fairly well, and there is a growing optimism among them. Those who have the resources to do so are stocking up their ranches. Prices of breeding stock have advanced for the first time in five years. The cattle industry is moving once more toward prosperity.

Sheepmen in Fifth Good Year

The sheep industry is enjoying its fifth consecutive prosperous year. It is apparently still expanding. Prices for wool and lambs at present are perhaps not high enough to encourage continued expansion of the sheep industry except in areas especially suited to it. They are high enough, however, to justify the statement that the sheep industry as a whole is in a very satisfactory condition. It is a favorable augury that world stocks of old wool were reduced to a low point at the end of last season.

On the whole the dairy industry has been in a relatively favorable position since 1921. Its products did not suffer as great a slump in prices during the depression as those of the grain and meat industries and it did not remain depressed so long. Comparatively low prices caused some apprehension among dairymen in 1924. Last year, however, the markets for dairy products began to reflect a better balance in production, and this year dairymen in the East and North have had fairly good returns.

In the far West the present year has been one of continued improvement on the whole. The Pacific coast had an early and favorable crop season in contrast with the East and has done reasonably well with grain, livestock, truck crops, and citrus fruits, but apples, pears, and peaches have been low in price.

Crop-Readjustment Results

This brief summary of agricultural conditions shows that farmers are getting results from the steps they took, following the depression of 1921, to curtail overproduction and to bring their leading enterprises into profitable balance. This undertaking bore substantial fruit in the first years after it was started. Last year, however, it became apparent that in most lines (cotton being an outstanding exception) practicable readjustments in production had largely been made. Farmers, therefore, sought other means of improving their lot. They paid particular attention to improving the quality of their output and toward regulating to better advantage its movement to market. It seems reasonable to credit to these activities a considerable part of the improvement that has been effected in the general situation. Agriculture is now unquestionably on the upward grade, as a result in large measure of the intelligence, energy, and determination of the farmers themselves. I look forward with

confidence to further progress from the same causes. This is not to say that everything necessary for the reconstruction of agriculture on a sound footing can be done by the farmers themselves. Later I shall have some remarks to make on the assistance agriculture is entitled to ask from other groups in the community and from the Nation. Just here, however, I want to emphasize what the farmer can do for himself by efficient production properly regulated to the demands of the market.

Variations in Efficiency

Many farmers can improve their methods with profit to themselves. There are great variations in the efficiency of production on different farms. Some dairy farms produce 100 pounds of milk with $1 worth of feed, while on other farms $2 worth of feed is required to produce the same quantity. On some farms a bale of cotton is produced with 200 hours of labor, while on others, where natural advantages are just as great, 300 hours are required. Some hog raisers manage to produce 100 pounds of pork for every 250 pounds of grain fed to hogs. Others use more than 500 pounds of grain in the production of 100 pounds of pork. These examples indicate some of the possibilities that exist for increased efficiency on the farm. Similar variations in efficiency and similar possibilities for improvement exist in farm enterprises in all sections of the country.

There are opportunities for farmers to improve the quality as well as to lessen the costs of their production. It should not be forgotten that high-quality goods cost no more to ship than low-quality goods. They consequently leave a bigger margin for the producer after all expenses of marketing have been paid. Efficiency in production does not mean maximum production per acre nor does it necessarily mean production at the lowest cost per unit of production. The farmer is most efficient who uses the methods that will give him the greatest returns from his farm as a whole. This aim clearly calls for attention not only to the unit cost of production but to the quality and the volume of the things produced. However, it should be remembered that increasing efficiency in production will not by itself result in permanently improved income for agriculture as a whole. If farmers in general let lower costs and temporarily larger returns encourage them to increase the total volume of their production too much, they will drive down prices as fast as they reduce their production costs.

Problem Has Many Aspects

In considering what can be done for agriculture by collective action among farmers, by other groups in the community, and by the Nation acting through governmental agencies, it is well to bear in mind that the farm problem must be approached from many angles. Much recent discussion has emphasized the surplus problem as the root of the farmers' difficulties. Surpluses of various crops unquestionably exercise an influence on prices entirely disproportionate to their amount. Moreover, difficulty in the disposal of surpluses is not confined to any one section of the country or to any particular class of farm enterprises. It is a difficulty that dairymen, fruit growers,

livestock raisers, cotton growers, grain growers, tobacco growers, and producers of nearly every staple farm product have to grapple with from time to time. Nevertheless, the farm problem is not merely a question of disposing of temporary oversupplies, although that is a very important question. It is necessary to deal also with costs on the farm, with taxation, with transportation charges, with merchandising methods, with adjustment of production to probable market requirements, and with many other matters. With the more important of these I shall deal in some detail later in this report.

THE SURPLUS PROBLEM

As to the surplus problem, there are two general avenues of approach to its solution. One is through a better adjustment of production to market requirements. I recognize the difficulties of controlling production, but I am convinced nevertheless that through organized and well-directed efforts much more can be done than we have hitherto done to eliminate the recurring surpluses that prove so detrimental to the farming industry. Our accomplishments in this direction since the war indicate possibilities for the future.

The other approach is through marketing. It seems to me that the central problem is one of merchandising. Better control of the movement of agricultural products into consumption channels is needed. This means that adequate marketing, storage, and credit facilities must be available and that producers must be organized to act together in their marketing operations. An orderly flow of products to market, I believe, can best be effected by farmer-controlled agencies. Legislative action should be designed to create and enlarge such agencies and supplement their efforts. No general formula will cover all commodities and all regions. Every region and every commodity has its special marketing problems. What is needed is concentrated and coordinated effort backed up by adequate resources. To do this may require further enabling legislation.

As I have frequently stated, the great need to-day is to give the farmer greater bargaining power through centralized selling brought about by the consolidation of our existing cooperative associations along commodity lines. There are many advantages in cooperative effort, and I shall touch upon them more in detail in my discussion of the cooperative marketing movement. What we are concerned with here is the subject of agricultural legislation as it relates to marketing.

Many of our recent agricultural laws have been directed to the marketing of farm products. The United States warehouse act gives to the farmer a warehouse receipt for his stored products which is universally recognized as sound collateral for loans. Cooperative organizations are making constantly wider use of Federally licensed warehouses. The intermediate-credit banks established under the agricultural credits act of 1923 are extending credit to organized farmers, and this credit fits well into cooperative effort. These and other acts have made a real contribution to the marketing of farm products.

Funds Needed for Marketing

If we are to give particular attention to centralized cooperative effort, even present credit facilities may not be sufficient. Coopera-

tive associations are not able to obtain sufficient cash advances on their products to enable them to practice orderly marketing in a complete sense. At the best they can only obtain 65 or 75 per cent of the going market price of their products, and there are thousands of farmers who can not operate on this basis, for their current expenses demand more nearly the market price at the time the crops are harvested. For the same reason many of them can not join a cooperative association.

If additional funds were available to make advances to cooperative associations in addition to credit available from existing agencies, they could make liberal payment to members at the time the products were delivered and their power to regulate the movement of products into consumption channels would be greatly enhanced. It would be possible for them to carry surplus production from one season to another. The individual farmer would have the money for his products but would not lose control over them.

Action of this sort would tend to stabilize the prices of farm products. This is a very different thing from price manipulation. Studies made by the department show that over a relatively few years the production and market requirements of most farm products are in fair balance. This indicates that a program of orderly marketing, with resultant stabilized prices, is easily within the realm of possibilities. Such a program would not menace the interests of consumers but would contribute materially toward the general stability of supply and markets.

Consumers' Interests Safeguarded

It may be well to emphasize the fact that no hardship to the consuming public is caused by a program of stabilized prices. Periodic and seasonal depressions in the prices of farm products are not reflected in corresponding declines in prices to consumers, but they play havoc with the agricultural industry. A sound program of price stabilization would guarantee an even flow of products to the consumer at fair prices. It would thus be a benefit to both the producer and the consumer. Agriculture does not lend itself to monopolies or to improper price manipulation. Attempts have sometimes been made by agricultural organizations to exact prices out of line with basic supply and demand conditions. The result has invariably been unfortunate for the authors of the plan. Efforts at price stabilization in harmony with supply and demand conditions, on the other hand, are quite generally successful. Organization of farmers in cooperative associations formed on a commodity basis seems to me the best way to stabilize prices.

DEVELOPMENTS IN COOPERATIVE MARKETING

This opens up the general subject of cooperative marketing. Gluts and wastes can not be overcome, nor can the spread between what the farmer receives and what the consumer pays be narrowed sufficiently until effective machinery has been set up to feed farm products into the markets of the country in an orderly manner and at a rate consistent with consumption requirements. This is a formidable undertaking. There is a natural division of interests between

different agricultural sections of the country. Farmers of the East are heavy buyers of western grain. The South is a heavy buyer of northern pork products, grains, and feedstuffs. The North is a buyer of cotton products. Even within the same region the grain grower's finished product may be the livestock feeder's raw material. Our marketing policy should have regard for the interests of agriculture as a whole. A plan of organization that will work fairly and effectively as between the cotton producers of the South and the milk producers of the New England States, the corn growers and the hog raisers of the Corn Belt, the citrus growers of California, Florida, and Texas, the cattlemen of the range and beef-cattle States, the potato growers of Maine, Idaho, Wisconsin, and Minnesota, and the producers of all the other crops grown in this country, can not be improvised in a moment. I believe, however, that we are on the right track when we emphasize the commodity principle in cooperative organization.

Coordination of Units Needed

It is obvious, of course, that cooperation will not do much for the wheat grower if 5,000 or 10,000 associations try to operate in wheat independently of one another. There is needed a coordination of local cooperative units and a central sales agency. Only by such means can farmers expect to have any effective bargaining power in the wheat market. But a wheat cooperative with a central sales agency that had in its possession from 100,000,000 to 200,000,000 bushels of wheat might help materially in stabilizing wheat prices.

The United States has become great industrially largely through mass production, which facilitates elimination of waste and lowering of overhead costs. Large-scale organization in the business world has effected tremendous economies both in production and distribution, and has enabled manufacturers to supply consumers with what they want when they want it. It seems to me that in this matter agriculture must follow the example of industry. It must have a similar large-scale development of its business organization, managed by competent executives. There are 6,500,000 farmers, each representing a unit of agricultural business. It is therefore not easy to organize agriculture for effective business operations. But the start that has been made in that direction indicates that it can be done.

Natural limits to the extent to which cooperative marketing can be centralized are set by the fact that each basic agricultural product presents problems of its own. It is obviously impracticable to have wheat growers, cotton growers, fruit growers, and livestock raisers all in the same organization. So far as I can see now, there ought to be separate organizations for each leading commodity. But there ought not to be too many competing organizations each striving to handle the same product. When a crop is handled by several hundred small concerns, whether they are cooperative or private, there is bound to be confusion, price cutting when supplies are heavy, market gluts, and other conditions that result in heavy losses for which the producer must pay.

I have already mentioned the possibilities open to wheat growers through the federation of local cooperative organizations. It is necessary to have local farmer-owned elevators. Local cooperative

units are necessary for assembling and shipping wheat. Local organizations, however, can not exercise any effective bargaining power unless they follow a limited marketing policy. Such action is, of course, impossible without an overhead selling agency representing them all.

Building Bargaining Power

What we need, in short, is organization, both local and regional. Our cooperative marketing agencies should be organized on the broadest scale compatible with effective dealing with the special problems presented by the different branches of agriculture. As I have mentioned wheat several times in this connection for purposes of illustration, I may as well amplify my point by further reference to that commodity. There are about 4,000 farmers' elevators in the United States and no fewer than nine wheat pools. These elevators and pools, however, do not conduct any common policy. As a result they have probably little more bargaining power than have individual wheat growers. But if they were federated our wheat growers' organizations would be in a position to exercise a very considerable influence on market conditions. It is not necessary for a cooperative association to handle the whole of a crop in order to have some say as to its price. It is often enough to control merely the surplus beyond what is required for current consumption.

Farmers can unquestionably exercise effective bargaining power through commodity organizations representing a majority of the heavy producers of the crops handled by the organizations. In that way they can prevent disastrous ups and downs in prices, cause a steady flow of products to the best markets, and exert some influence on production. It is important that farmers' organizations should not confine their work merely to regulating the flow of agricultural products to market. They should seek to adjust production as well as marketing to consumption requirements. Effective agricultural cooperation begins at seeding and planting time, and in the case of many crops ends only when the product is turned over to the processor or to the consumer. When farmers' business organizations take this broad view of their functions they can make a real contribution to the stability and progress of agriculture.

Required Degree of Organization

What proportion of the producers must be organized in cooperative associations to get the best results is a keenly debated question. Enthusiasts will not be content with anything less than 100 per cent organization. As, however, this end is not likely to be reached for a long time, if ever, we shall do well to bear in mind the demonstrated fact that cooperative marketing is not dependent for its success on the inclusion of all farmers in its organizations. Cooperative organization is often measurably effective even when very incomplete. It is true that a cooperative association controlling only part of a given crop may sometimes confer more benefit on nonmembers than on members. It may enable nonmembers to get better prices than would otherwise be obtainable, without saddling upon them any of the expense or risk involved in the operation of stabilizing the market. However, that is a liability which the cooperative

movement in its earlier stages can hardly avoid. It will tend to diminish as the farmers become better informed about cooperation and join cooperative associations in larger numbers. Eventually, no doubt, a situation like that seen in the case of certain great industrial organizations will arise, wherein unorganized "independents" find themselves more or less obliged to fall in step with the general marketing policy laid down by the dominant organized group.

An Objection Answered

It has been suggested that farmers who produce many crops will find it impossible to participate advantageously in cooperative marketing through organizations formed on commodity lines. The idea is that they can not be expected to join a sufficiently large number of different associations. This seems to me a very trivial objection to the method of organization which I am advocating. It would seldom be necessary for farmers to belong to more than two commodity organizations, since few farmers produce more than two different major crops. The average farmer can not expect to do the whole of his business through cooperative agencies, for the present at any rate. A wheat farmer in the Red River Valley of Minnesota, for example, would probably find his interests sufficiently protected by membership in a wheat cooperative. Conversely, a dairy farmer in the same State, with only a small wheat acreage, would probably be content with membership in a dairy cooperative. As a matter of fact, however, thousands of farmers already belong to more than one farmers' marketing organization without getting their affairs unduly complicated.

Cooperative associations reporting to the department at the end of 1925 had on their membership rolls a total of 2,700,000 producers. Allowing for duplication, owing to the fact that many farmers are members of two or more associations, and for inactive members, it is conservative to state that approximately 2,000,000 farmers are now engaged in cooperative marketing. The membership of cooperatives to-day is more than three times as great as in 1915, when it was approximately 651,000. The total business of cooperative associations in 1915 was $635,800,000. In 1925 it reached approximately the huge total of $2,400,000,000.

Possibilities of Cooperative Marketing

A large-scale efficiently managed cooperative can effect three fundamental improvements in the marketing of farm products: (1) It can standardize grades and handling methods; (2) it can develop an effective merchandising program; (3) it can give the farmer information which will enable him to visualize market conditions six months or a year in advance, and thus assist in making adjustments in his production plans.

The development and use of grade standards has come about largely because of the demands of the cooperative associations. In pooling the products of their members, the cooperatives must have grades so that they can make returns to the growers in accordance with the market value of the product each one produces. The cooperatives have also found that the standard grades make trading

easier, reduce wastes, and promote wider distribution and increased consumption.

The cooperative associations can do a better job of merchandising farm products than the individual producer. Merchandising means more than taking orders. The aim of the selling program of a cooperative should be service to its members and its customers. A thorough study of the price and demand history of a commodity and a knowledge of the present and potential supply are essential before the correct selling program can be determined for that commodity. The association must know the supply of the product and of competing products. An association selling oranges must be informed regarding the apple crop, because apples come into competition with oranges. If there is an unusually large crop of Italian lemons, the California lemon growers must take that fact into account in their price and sales policy.

Furthermore, the association must know the markets and the factors that affect prices. When it has collected all this information, the association must use it to guide its price policies; it must determine the markets in which it will attempt to sell, the quantity it will offer each day or week, and the trade channels it will use. Only a large-scale organization can do this job efficiently.

An Example of Market Information

As an example of information that may be used to guide the marketing policies of cooperatives, studies by the Bureau of Agricultural Economics of the relationship of wheat supply to prices may be cited. The world supply of wheat—especially the supply of the Northern Hemisphere—has a greater influence on price than the supply in the United States, whenever there is a surplus for export. Hard spring-wheat production is frequently sufficient only for domestic requirements, but there is usually a surplus of other classes. The relationship for a period of 25 years of the supply of wheat in the Northern Hemisphere (production plus carry-over) and the supply in the United States to price has been calculated. From these studies it is possible to determine the usual relationship between supply and price during these years and to use the information in estimating probable movements in the future.

Finally, the cooperative associations can furnish the producers information by which they can adjust their production in the light of market requirements. Cooperation must reach back to production, guide the organization of farm enterprises, and direct the production programs of the members. The problem of agriculture at the present time is largely one of coordinating production. To a large extent each of 6,500,000 farmers produces farm products without reference to the plans of his neighbors and without consideration of the factors which will be instrumental in determining whether he produces at a profit or loss.

Cooperation is already having an important effect upon production. Among the fruit growers, undesirable varieties are being eliminated and the quality of the fruit grown is being improved by better cultivation, fertilization, and spraying. The milk producers are delivering a product testing higher in butterfat and lower in bacterial

count. Cotton growers, who are paid through their cooperative associations according to the grade and staple of their crop, are making fruitful attempts to plant only standard varieties and to avoid damage which lowers the grade of their cotton.

A few of the milk producers' organizations have been able to go further in influencing production than the examples given. An association in an eastern market, for example, adopted some years ago a "basic price" policy in making payments to its members. By this plan, the quantity of milk delivered by each member in October, November, and December was rated as "basic milk" and paid for at fluid-milk prices. Each member receives the fluid-milk price for the same quantity delivered each month from January to September, but "surplus milk" delivered during these months—that is, the quantity in excess of his average production during October, November, and December—is received at a lower price which is based on the price of 92-score butter in New York City.

Wholesale Production Shifts

The results of this policy have been a wholesale shift in production. The last three months of the year were formerly months of scarcity, and the early spring and summer months saw large, unmanageable surpluses of fluid milk coming on the market. During 1925, the average deliveries to this association from January to September exceeded those of October, November, and December by only 10 per cent. In other words, the dairymen were able by changes in their practices to maintain practically as large a flow of milk during the late fall and early winter months as during the remainder of the year. The milk supply situation has been stabilized so that seasonal surpluses are no longer a serious factor. Partly as a result of this stabilization, prices to the producers have been among the highest paid in the eastern United States, while prices to the consumer have been from 1 to 2 cents a quart lower than those paid in most large Eastern cities.

Pitfalls of Cooperative Marketing

Failures in cooperative marketing have not been unusual, considering the number of associations formed and the volume of business transacted. From 1920 to 1925, years for which the department has reasonably accurate records, the largest number of failures reported was 194 in 1923, 1.9 per cent of all associations reporting to the department that year. Failures in 1925 were only 0.3 per cent of the more than 10,000 cooperative associations reporting during the year. The failure of cooperatives which have gone out of business can be traced, in most cases, to a few well-defined causes.

Chief of these, according to reports received from former members and officials of approximately 1,100 defunct associations since 1913, is failure to obtain a sufficient volume of business to make possible economical and efficient operation. The causes which lay behind this situation are often somewhat obscure. The commodity may not be produced extensively enough in the community or region to justify the organization of a cooperative association. For example, a number of cooperative creameries were formed in Kansas,

during the nineties, in communities that were not dairy sections and offered no prospect of developing into such in the immediate future. Consequently a large number of failures followed. Again, the sentiment of the producers in the region may not be favorable to cooperative marketing, or there may be antagonism created by the policies of the management, or lack of confidence in the ability of the management.

Members of cooperative associations which fail because of insufficient business very frequently ascribe the failure to poor management. In more than half of the 1,100 suspensions of which the department has record, inefficient management was given as the sole or one of the chief causes of failure. Wisely planned and intelligently directed management is by far the most important element in business success and lack of it the most certain cause of failure. In speaking of management, I want in particular to emphasize the duties and responsibilities of the board of directors.

Directors Have Responsibilities

One of the serious weaknesses of many cooperatives is found in the tendency of members of boards of directors to shirk their responsibilities. Too frequently the individual member elected to the board looks upon his selection as a director in the light of an honor conferred upon him in recognition of his standing in the community and as carrying with it no responsibility. Such an attitude is unfortunate, and until every director comes to feel that he is accepting the trusteeship for the successful conduct of the business, cooperative marketing will fail of its full measure of success.

Changes in economic conditions at times interfere seriously with the operations of cooperative associations. The shift in demand from cigars to cigarettes, for instance, has seriously embarrassed the tobacco marketing associations in the cigar-leaf sections. Some cooperative creameries have gone out of business because the growth of near-by cities has opened up a fluid-milk market for their members. During and immediately after the war, the high prices paid by condenseries put out of business a number of cooperative creameries and cheese factories, many of which had been operating for 20 years or longer.

Danger in Price Control

Too often in the organization of cooperative associations the idea has been broadcast that control of supplies by the farmers will enable them to fix the prices of their products. This doctrine has been a factor in the failure of some cooperatives. The price which a cooperative obtains for its products is determined by the supply of the product and the demand for it. Not only the supply in the possession of the association but that controlled by other shippers and produced in other sections of the United States and in foreign countries influences prices. The supply and price of competing products are also factors. Wheat competes with corn and rye as a bread grain; cotton with wool and artificial silk; and potatoes with sweet potatoes and other vegetable crops. The association which attempts

to manipulate prices by withholding its products from the market usually discovers that it has created a more favorable market situation for competing sections and products and has possibly sacrificed the crops of its members. The disappointment resulting from the failure of a program that from the beginning was impossible has in some cases set the stage for failure.

A brief analysis of the price history of various commodities will illustrate the difficulties that a cooperative association would encounter in attempting to fix prices arbitrarily. Although all the raisins produced commercially in the United States are grown in a limited area in California, and a cooperative association should control 85 per cent of the output, it could not maintain a profitable price level when confronted by huge domestic production and the growing competition of foreign countries. Much less could this cooperative, apparently ideally situated to control price, maintain, if it were so inclined, an arbitrarily high price level. Plans for monopoly control set up an objective that can not be attained. Such plans obscure the real possibilities and purposes of cooperative marketing, and in the long run are harmful to cooperation and to the development of efficient marketing.

Success Based on Service

The associations with a record of accomplishment have been successful because of the superior service they have been able to render their members and customers and not because they have been able arbitrarily to fix prices. As one definite example, the experience of a woolgrowers' cooperative association, with headquarters at Columbus, Ohio, may be cited. This association was formed in 1918, and in eight years (1918–1925) has marketed 25,139,000 pounds of wool produced by Ohio, Indiana, Michigan, and West Virginia growers. Its average net returns to its members have exceeded the average of local Ohio prices each year by amounts varying from 2½ cents per pound in 1925 to 8 cents in 1921 and 1924 and 9 cents in 1922. This represents increased returns to its members totaling over $1,500,000 for the eight years, without considering the effect the activities of the association may have had on local prices and buying practices. The members in addition are the owners of a wool warehouse in Columbus which was purchased in 1920 for $125,000.

The success of this association has been due, first, to the education of its members with regard to wool grades, the care of the flock, and the preparation of the clip; second, to the practice of selling direct to the mills. It markets wool throughout the year and supplies each mill the grade of wool that will meet its needs, prepared in such a way that it can be handled with a minimum of waste. These are services to its customers which enable the association to obtain a premium for a large part of its wool.

In the marketing of fluid milk a California cooperative association has made progress, which is typical of a number of successful fluid-milk organizations. This association was formed in 1915, and operated as a price bargaining association until 1920. In that year it acquired 60 per cent of the stock of a retail milk-distributing company at Los Angeles, and now is sole owner of this company.

Milk Handled Through Subsidiary

At the present time 41 per cent of the milk produced by members of the association is distributed to the consumers through this subsidiary company. From 26 milk routes in 1920, the business had grown to approximately 200 milk routes at the beginning of 1926. The remainder of the milk delivered by members of the association is sold to other distributors, and during periods of surplus a portion is manufactured into by-products. Improvement of the product and the coordination of marketing machinery have stabilized returns to the producers. In 1925, milk to the value of $5,570,032 was handled by the association at a cost of 1.2 per cent.

A cooperative association marketing cotton has found that its chief possibilities lie in giving its customers—the manufacturers—superior service. The spinner wishes to purchase cotton in "even-running lots"—that is, all of the same grade and character. He wants cotton which meets his special needs. The officials of the association quickly recognized that they must first ascertain the needs of their customers, then develop standard "types" which meet these needs, and deliver the exact grade and staple length which the customer desired—not once, nor occasionally, but continuously. This appears to be a simple problem, but it is really very difficult for any agency but a cooperative association to meet it satisfactorily. The association can give its customers "even-running lots" because it has some 200,000 bales from which to select the exact cotton each buyer requires. By its system of classification and records it knows the grade, staple length, and weight of each bale, the warehouse where it is stored, and the grower who produced it. The dealer who sells 100 bales to a manufacturer with the expectation of buying this cotton—1 bale or 10 bales at a time, as it becomes necessary to make deliveries—can not guarantee the uniformity of his shipments with the same assurance as the cooperative association which *knows* it has that exact type of cotton on hand.

New Cooperative Law

The legislation enacted by Congress has been wisely planned to free the cooperatives from undue restrictions and to assist them in meeting their problems. The Capper-Volstead Act, which became a law in 1922, recognized the right of producers to organize cooperatively, and removed the threat of prosecution under Federal anti-trust statutes of cooperatives conducting a legitimate business.

The past year has been signalized by the passage of the act to create a division of cooperative marketing in the Bureau of Agricultural Economics. This bill was drafted after conference with cooperative leaders representing all commodities and all sections of the country. It is designed to enable the department to conduct research studies and furnish service which will aid in the development of the cooperative movement. Research designed to test existing business and marketing methods, education in the principles and practices of cooperation, and such service to the cooperatives as can be rendered by a fact-finding agency are the objectives of the new division.

Research in the business and marketing methods of cooperation, such as the department is undertaking, is not a theoretical abstrac-

tion but can be made of practical help and guidance to the associations. The need of the cooperatives for the assistance research can furnish is probably greater than that of private business. Each advance made by cooperative associations calls for a careful study of the conditions under which they must operate. They require a type of research that not only deals with established methods and practices but looks forward to changes which the development of cooperation will introduce.

Commodity Studies Begun

The division of cooperative marketing is studying at the present time the cooperative marketing of cotton, grain, livestock, fluid milk, and fruits and vegetables. A study just completed of the costs and operating practices of cotton gins may be cited as an example of the work that is being carried on. This study was undertaken in anticipation of the interest which exists among the members and officials of cotton-marketing associations in the formation of local cooperative gins. They will have, as a result of this study, definite information to guide them in forming their ginning associations, and an understanding of the possibilities and problems of this form of organization.

A project dealing with the organization, operating, financial, and selling problems of individual cooperatives was inaugurated early in 1925. This work will be expanded under the provisions of the cooperative marketing act. The demand for studies of this kind indicates the interest among cooperative associations in a close analysis of their business and merchandising operations and in the external factors which affect the prices received for their products. The object in conducting analyses of the business of individual associations is primarily to accumulate a sufficient number of cases to set up operating ratios and standards for cooperatives, and to study by a case system the economics of cooperative marketing. It is essentially a research project, although the development of methods that will enable the cooperative associations to study their own problems is an immediate service.

Employment of Specialists

The act makes possible also the employment of specialists who are versed in cooperative marketing and familiar with the problems of particular commodities. These men will have two functions; first, to collect statistical and other information made available by the Department of Agriculture and other agencies, and disseminate it to the cooperatives in such form as will be most useful; second, to outline and assist in marketing research and service required by the cooperative associations. These men will have a helpful personal relationship with cooperative organizations, and to a certain extent will be a connecting link between the associations and the men and agencies engaged in research work.

The department expects to cooperate with and assist schools for instruction in cooperation which are being conducted by agricultural colleges and cooperative associations. The growing interest in this instruction is indicated by the increased attendance of members,

directors, officers, and employees of cooperatives who spend a week or more at these schools learning the general facts regarding cooperation and the details of financing, accounting, and merchandising methods. The department can make an important contribution by assisting in the development of programs for these schools and by bringing a national viewpoint to those who are considering State and local problems. The dissemination of knowledge regarding the principles and aims of cooperation is one of the major problems of the movement. It is the foundation of sound cooperation.

The department, under the cooperative marketing act, intends to render services which will promote and foster cooperation. The act does not give the department regulatory control over the cooperative associations in any degree. It has never been the policy of the department to attempt to seek such control. Neither does the department intend to undertake any of the functions which the cooperatives themselves were organized to perform. The work of the department will be confined to those research, educational, and service activities which it is peculiarly fitted to perform, and it will be guided in this work by the developing needs of the cooperative organizations.

AGRICULTURE'S UNCONTROLLABLE EXPENSES

Farmers can do something toward regulating their output and reducing their costs of production and marketing, but many items of farm expense are virtually outside their control. Overhead expense for taxes, interest, insurance, and depreciation is determined largely by factors over which the individual farmer has little influence. This is not to say, however, that nothing can be done toward keeping the fixed charges of the agricultural industry within bounds. Collectively, farmers can accomplish much. I shall refer in detail later to taxation. As a voter, the farmer has some say as to taxation, but his is not by any means always the deciding voice. He often finds himself saddled with a disproportionately high tax burden for public expenditures that benefit him considerably less than they benefit other groups in the population. I shall give some instances of this sort of thing when I take up the general subject of taxation.

Interest charges are another farm expenditure not determined by the individual farm operator. Much has been done in recent years toward reducing the burden of agricultural interest rates for both long and short term credit. Agriculture needs three types of credit. It needs long-time loans on land, short-time credits for six months or less, and production credit running for terms from six months to three years. The establishment of the Federal land banks and the joint-stock land banks has provided admirably for land loans. These banks have loaned more than $1,698,000,000 on terms that have relieved farmers and ranchmen of high interest rates and given them a great incentive to thrift.

Intermediate-Credit Facilities

Our commercial banking system in general provides short-term credit for agriculture in most regions, although certain districts are

still not well served. Facilities for furnishing intermediate credit are now available through the intermediate credit banks which have been set up under the agricultural credits act of 1923. These banks provide a means of advancing all the money that can be prudently employed in the production of livestock or in the marketing of such agricultural commodities as can be insured and safely warehoused. They can loan it, moreover, on conditions that free the producer from worry as to whether his loan may be called before he can finish the undertaking for which he obtained it. Comparatively little advantage, compared with their possibilities, is taken of the facilities offered by the intermediate credit banks. However, the cooperative associations are awake to the usefulness of these institutions.

There is a close relationship between the intermediate credit banks and the cooperative movement. More than half the loans of the banks have been made to farmers' cooperative marketing associations. Moreover, the fact that the cooperatives can tap the resources of the intermediate credit banks has a tendency to make it easier for them to get credit from commercial institutions. That has been demonstrated over and over again. Cooperative associations can get money more easily and on better terms from commercial banks now that they have the intermediate credit banks to fall back on in case of need. The intermediate banks loaned nearly $125,000,000 to cooperative marketing associations last year to finance production as well as marketing. Many cooperative associations have organized credit corporations which can rediscount the paper of their members at the intermediate credit banks. In this way the resources of the banks are made available to thousands of producers who might otherwise have to borrow for production purposes on very unfavorable terms.

FREIGHT RATES

Transportation charges, although not overhead in the proper sense of that term, nevertheless are often a burdensome, uncontrollable factor in farm business. Farm commodity prices, especially in areas distant from markets, are seriously depressed by high freight rates. It is my conviction, often stated, that we must have substantial readjustments in freight rates. There have been no freight rate reductions of importance on agricultural commodities in the last year. The Department of Agriculture's index of freight rates indicates that they are still 58 per cent higher than before the war. It is instructive to compare this figure with the index for farm commodity prices, which in September stood at only 34 per cent above the pre-war level.

What rail transportation charges sometimes mean to the farmer can be realized from an illustration or two. It costs 26.4 cents to ship a bushel of wheat from Wichita, Kans., to the Gulf of Mexico. It costs 27.8 cents a bushel on the average to ship wheat from the spring-wheat area to the Atlantic seaboard. These freight costs are large relatively as well as absolutely. They place the American farmer at a disadvantage of from 4 to 10 cents a bushel in comparison with the freight costs of his competitors in Canada and Argentina.

Rate Increase Refused

In the past year a request from the railroads of the western district for a general increase in freight rates on all commodities was refused on the grounds that no financial emergency exists that would warrant such an increase. The Interstate Commerce Commission is continuing its general investigation of the freight-rate structure as ordered by Congress in the Hoch-Smith resolution, which directs such changes to be made as will promote the freedom of movement of agricultural products affected by the depression, including livestock, at the lowest possible rates compatible with the maintenance of an adequate transportation service.

The freight-rate structure of the country has grown up in a haphazard way, which has resulted in a lack of uniformity in rate relationships and adjustments. An example of this is seen in the relation between rates on livestock and fresh and cured meat. Rates have been recently prescribed on shipments between Chicago and New York, establishing rates on fresh meat not to exceed 140 per cent of the livestock rate. As evidence of the need of a general readjustment is the fact that in contrast to this relationship of 140 per cent which was found reasonable, the relationships between these rates from other competitive points varies from 111 to 147 per cent.

A revision of the freight-rate structure on fertilizers in the South has been made, placing rates on a uniform basis throughout the territory and removing any discriminations that may have existed. It is believed that the revision will result in somewhat lower rates in the aggregate.

Recognize Farm Conditions

The financial needs of the carriers to maintain their roads adequately must be recognized, but the depressed condition of agriculture in many parts of the country must also be recognized. Where the established rates are yielding more than adequate returns it is reasonable to expect that rates on agricultural products suffering from a depression will be reduced.

The railroads in the southern district, for example, are in a prosperous condition, with earnings in excess of what has been determined to be a fair return. The cotton farmer, on the other hand, is facing a year of low prices for cotton. Should it be determined that the cotton farmer may be facing a period of depression, some consideration should be given to the possibility of revising the rate structure in this territory so as to afford him some relief.

Even where railroad earnings do not run in excess of what has been determined to be an adequate return, some relief may be provided for agricultural products suffering from a depression by shifting more of the burden of the rates from these depressed agricultural products to products that are better able to carry the burden.

HIGHWAY IMPROVEMENT

We have entered upon a period of remarkable development in our highway system, a development conditioned quite largely upon the growing use of motor vehicles. It is important to the Nation that this highway development be so directed as to bring good roads

as near as possible to every farmer and at the same time that it be coordinated effectively with other transportation facilities. The program of road building should be in keeping with the needs and resources of the various regions of the country. It is a matter of national concern, and one upon which there should clearly be cooperation between the Federal and State Governments. Detailed information about Federal-aid roads will be given later in this report.

There is no doubt, of course, that the money spent on highways brings a compensating return in reduced expense for the operation of vehicles. This is amply demonstrated by surveys of highway transportation which the Department of Agriculture has made in cooperation with the State Highway Departments of Maine, Connecticut, Pennsylvania, and Ohio. Main intercity roads in these States constitute only one-tenth of their total highway mileage. Nevertheless, there is spent on such roads under the supervision of the State highway departments at least half of their total annual expenditure for highway purposes. They carry a traffic considerably greater than half the highway traffic of the States in question. That owners of motor vehicles believe they benefit from expenditure on highway improvement is indicated by the fact that they now pay in special taxes, without the least objection, an amount which is not less than two-thirds of the annual expenditure of the State highway systems.

Agricultural traffic on these main roads, however, is only a small part of the total. Their traffic is mainly of an intercity character. It neither originates from nor leads to the farm, and therefore helps to improve the condition of the farmer only to the extent that he benefits from whatever general improvement of business conditions the traffic may bring about. In the benefits of main intercity roads, the farmer shares only as he uses them in common with the more numerous users who live in cities and do their business in cities. Clearly, then, it is a mistake to improve such roads by a system of taxation that places the burden largely on farm land. In States in which an effort is made to finance such road improvements in greater or smaller measure by local taxation, there is complaint. The remedy is obvious. Taxation for main road improvement should be on a State-wide basis. There is special appropriateness in the use of motor license fees and gasoline taxes for this purpose.

Roads to the Farms

But we have more than 2,750,000 miles of roads not included in State main highway systems. For the improvement and maintenance of these roads, revenue may reasonably be derived from taxation of real property. Most of this mileage is devoted to the service of farm land. Indeed, much of it accommodates no one else than a few farmers. Investigations made in Iowa, Wisconsin, and Illinois show that the improvement of such local roads is invariably followed by reduced farm operating expense. Improved roads to the farm cut down wear and tear on vehicles, shorten the time necessary for hauling, and give the farmer access to comparatively distant markets that otherwise he could not reach. In connection with radio and telegraph service, improved market roads enable the farmer to rush

his products to town when prices are favorable. This advantage is particularly great in shipping livestock. Livestock raisers who live within trucking radius of their market are in a much better position to profit by upturns in market prices than are those who are obliged to depend on rail transportation. The social benefits of better roads to the farm are perhaps even greater than the economic benefits. Good farm roads lessen the isolation of farmers, and make the farms better places on which to live.

It is extremely important to note, however, that the prevailing weight of farm vehicles, which does not usually exceed that of a 1½-ton truck, makes it unnecessary to improve local roads in an expensive manner. Most of them require no surfacing; very few need more than a coat of gravel or fairly inexpensive material. When local roads are improved beyond this point, there is no proportionate enhancement in the value of adjacent farm lands. It is a common mistake to overimprove this type of road. No road should be improved by the expenditure of public funds in excess of its earning capacity.

FARMERS' TAXES IN 1926

Farm taxes remain at almost the same level that they reached in 1925. A partially completed survey by the Department of Agriculture reveals the fact that the total taxes collected from farmers in 11 States are slightly higher in 1926 than they were in 1925. The 11 States which have furnished data contain nearly one-third of the farm acreage of the country and present a fairly accurate indication of the situation as a whole.

Drastic reduction in farm taxes can not be expected at the present time. The demands of the users of automobiles for better and more improved roads and the necessarily high costs of education will keep the expenses of the States, counties, and local units close to their present level. The reduction in Federal expenses gives the farmer little direct assistance, although reduction in Federal taxes may be reflected in lower costs for some of the articles that he must purchase.

Aid to agriculture in meeting the tax problem may come from two sources. In those States where agriculture is not the predominating industry it may be that the other industries are bearing less than their share of the tax burden. Where agriculture is the chief industry of the State there is often opportunity for relieving the tax burden by a readjustment of the tax system. Such a possibility should not be overemphasized. So long as Government costs are high the taxpayers must meet the bills. Readjustments of the burden will aid certain groups, but it will not lessen the total amount that must be collected.

Farmers Bear Undue Burden

Specifically, the farm group may be aided by a general alteration in both the general-property tax itself and in its method of application. As applied in most of the States, the general-property tax must of necessity burden the farmers to a greater extent than it does the proprietors in other industries. The farmers have a larger proportion of their property in a form that can be reached by the assessor

than do other groups, and it follows that they pay a larger share in the total expenses of government. An obvious solution for this difficulty points toward an attempt to devise taxes that will force other groups to contribute their share. The State income tax has been one means used to reach incomes that escape the general-property levy. Where the examples of New York and Wisconsin are followed and a portion of the receipts from such a tax, 50 per cent or more in these cases, is returned to the counties and local units, some relief is gained.

The importance of using the receipts from income or other taxes that supplement the general-property tax for purposes other than State expenses deserves emphasis. In 1922 the taxes collected by the States and minor civil divisions amounted to nearly $4,250,000,000. Only 20 per cent of this amount was collected by the States for their uses, the remaining 80 per cent going to the counties, incorporated places, townships, school districts, and other minor divisions. If tax reform is carried on in such a way that it affects only the State taxes it will fail to meet the needs that are greatest There is in many States a further reason for the distribution to the minor divisions of taxes collected on a state-wide basis. It is becoming common for the State to set certain standards to which the counties, townships, or school districts must conform. In a State where there is uniformity in economic conditions among the various sections, such requirements may not work a hardship on any. Where wealth is unevenly distributed over the State—and it must be recognized that this is the usual condition—it becomes increasingly difficult for the poorer divisions to conform to the standards that have been set up. This situation creates a reasonable basis for the state-wide collection and local distribution of an increasing proportion of taxes.

Sources of Taxation

It should be noted that the State income tax was mentioned only as an example of a method that has been used by some States. It is not urged that all States should adopt such a measure. The varying economic conditions and characteristics of the sections of the country make no single measure adequate to deal with the situation. The gasoline tax is another that might be cited as an example of a State-collected tax that is adapted either for distribution among the minor divisions or for use by the State in road building and maintenance to relieve the local divisions of some of their expense. This particular tax, with rates ranging from 1 to 5 cents a gallon, has within the last few years been adopted by practically every State. Forty-four of the forty-eight States were using it at the beginning of 1926. It forms a valuable means of collecting part of the cost of roads from those who use them. It again is only one of a number of taxes that are, and should be, used to relieve the pressure on general property.

Out of the four and one-fourth billion dollars collected by the States and their subdivisions in 1922, about three and a third billion came from general property taxes. That is, over 78 per cent of the total collected was levied on a basis which is especially burdensome to the farmer. The fact that so large a portion came from this source indicates its importance and demonstrates the fact that it

Another example consists of automobiles. On these there is a tariff of 25 per cent ad valorem, and there are also duties on certain of the materials entering into their manufacture. Does this affect the farmer in his purchase of an automoble? Not at all. The United States, manufacturing more than 85 per cent of all the motor cars produced in the world, invariably undersells foreign manufacturers on cars of the types used by farmers. If there were no tariff on automobiles and no tariff on iron and other products entering into their manufacture, foreign manufacturers would nevertheless be unable to compete. The tariff on automobiles is a tax paid by the very wealthy who are willing to pay a high price for the privilege of owning cars built in Europe.

All Items Not Balanced

Additional facts could be cited to show the fallacy of the general assertion that the farmer is wholly condemned "to buy in a protected market and sell his products in a world market." Those mentioned, however, will suffice. I am not concerned for the moment to prove that exact justice as between industry and agriculture is brought about by our existing tariff laws. So far as I know, all the items on both sides of the ledger have never been set down and balanced. I merely want to show at this point that the usual methods of condemning the tariff from the standpoint of agriculture are not to be relied on.

It is illogical to consider agriculture as a unit entity and to attempt to appraise the burden carried by this entity as a result of tariff duties on manufactured goods. The farm population must have its purchases segregated into producers' goods, or articles required in the business of farming, and consumers' goods, including the commodities used in all families. Since agricultural producers' goods vary from region to region and from crop to crop, it is misleading to consider them as a unit. If we are to appraise correctly the effects of the tariff on farm-production costs we must find out how it affects different crops.

Statistical material, crop by crop, is lacking for comparison between farm prices received and farm prices paid for producers' goods and for consumers' goods. I distrust comparisons between farm prices and wholesale index numbers. Our lack of comprehensive and trustworthy material on farm prices, incoming and outgoing, makes it difficult for us to define the extent of the disparity existing between farm costs and income. It is therefore impossible to determine to what extent farm costs and farm income are directly or indirectly influenced by the tariff.

Benefits to Farmer Large

Nevertheless we can be quite sure that the benefits agriculture receives from the tariff are numerous and substantial. These benefits, moreover, are likely to increase, because our agriculture is moving definitely toward a situation in which many of its leading products will be on an import basis. Each year the tariff is becoming more and more effective for agricultural products. Tariff duties on farm

products prior to the war were largely hypothetical. Now, with increasing population, with relatively declining farm population, with declining farm acreage per capita, and with increasing efficiency of farming, the tariff is becoming protective for crops formerly influenced mainly by the world market. Already it has become protective for premium products, such as representative flour wheats and other superior wheats. This has the advantage of stimulating the production of premium products and discouraging the production of low-quality products. Powerful forces are carrying us into a position in which the tariff will have its intended effect in the near future on a steadily lengthening list of important farm commodities.

Some examples of direct benefit obtained by agriculture from the tariff may be of interest.

Butter Imports Cut Down

During the month of May, 1926, following an increase of the import duty on butter from 8 to 12 cents a pound, the imports of butter into the United States amounted to only 103,000 pounds, whereas in the same month last year the imports were 331,000 pounds. During June this year we imported only 100,000 pounds of butter, as compared with 579,000 pounds in the same month last year. The same story has continued in succeeding months.

The long-time trend of our trade in dairy products is definitely toward an increased net importation. The war interrupted this trend, but since 1920 it has been markedly resumed. In 1924 the net importation reached a high point equivalent to 750,000,000 pounds of milk.

Since the enactment of the emergency tariff in May, 1921, the annual average price of No. 1 dark northern spring wheat at Minneapolis has been from 16 to 27 cents a bushel above the level of No. 2 northern Manitoba at Winnipeg (two approximately comparable grades of wheat), except for a few months when our heavy 1924 crop, coupled with a light foreign crop, put us substantially on an export basis.

The United States is the heaviest single consumer of flaxseed. We import as much flaxseed and linseed oil as we produce. The import duty on flaxseed is 40 cents per bushel, which, with the drawback equivalent to some 10 cents per bushel to American crushers who reexport the cake, leaves an effective tariff of about 30 cents per bushel. The monthly average price of flaxseed during the last crop year (1925–26) ranged from 22 to 40 cents per bushel higher at Minneapolis than at Winnipeg.

Wool prices at Boston fluctuate widely relative to London prices, but during the last five years they have, on the whole, reflected fully the fact that we produce annually only about 300,000,000 pounds of wool and import annually considerably more than that amount. The case of sugar needs no illustration. Our flourishing beet industry of the West has been developed behind a protective tariff. Many other illustrations of tariff benefits to agriculture could be given.

Tariff Should Fully Protect

Under our high-tariff régime, such tariff rates should be placed on farm products, article by article, as will insure the producer the home

market. The experiences of recent years have convinced me that the system of basing tariff rates on differences in production costs is inapplicable to agricultural products. It is quite impossible to obtain trustworthy production costs, weighted either for the total crop or for the bulk of it. A certain cost of cultivation and overhead, a certain agricultural effort, may in one year be rewarded with twice the crop that is obtained in another year. Therefore, costs of cultivation can not be relied upon to indicate costs of crop units in a particular year.

In these circumstances I have little confidence in a method of tariff making for agricultural products based on supposed differences in production costs. The only method of setting up a workable and effective tariff for agricultural products is to do what used to be done decades ago for manufacturing industries, namely, to fix rates at such a height as effectively to give the home market to domestic producers.

There is little to be gained from a purely academic analysis of protectionist and free-trade theories in this connection. We have had a tariff so long that our agricultural and manufacturing industries have become as thoroughly adapted to it as they have to our conditions of soil and climate and agricultural resources. A rapid change from tariff protection to free trade would throw our entire economic life into chaos. What we need to study is how our tariff system works out in its distribution of advantages and disadvantages among various economic groups. If a tariff system is discriminatory as to various groups in our own population it should of course be modified. It is important to know, therefore, whether or not our tariff system is discriminatory, and, if so, in what direction and to what extent. Research along this line is, I think, highly desirable.

It is equally difficult to weigh the pros and cons of tariff protection by considering its effect on only a few commodities. The mere fact that the tariff law quotes a certain specific or ad valorem duty on an article does not necessarily mean that the price of that article is increased by the amount of the duty. On many articles the duty could be doubled or removed without affecting the price. This is due to conditions within the tariff wall. Pig iron and furniture, already cited, are illustrations.

False Method of Reckoning

Nor can one decide that the farmer loses more than he gains from the tariff merely by estimating how much more he buys than he sells under protection. This method of computation rests on the false assumption that the price of the domestic product is always increased by the full amount of the tariff. A farm organization recently figured that the annual net loss to American agriculture from the tariff, based on the years 1917 to 1921, was $301,000,000. It estimated that the tariff in those years added $392,000,000 to the cost of farm products to all consumers and $1,323,000,000 to the cost of the products of all other industries to all consumers. It arrived at its estimate of the net loss to agriculture resulting from the tariff by making the wholly unwarranted assumption that the tariff was fully operative in every case.

Data Not Broad Enough

Computations purporting to show quantitatively the extent to which farmers' gains from the tariff are offset by losses due to the burdens imposed on agriculture by the tariff on manufactured goods are invalidated, as I have already said, by lack of sufficiently trustworthy and comprehensive statistics. It is obvious that the tariff is not the only factor in the wage scales and labor costs of American industries. Allowance must also be made for the effect of restricted immigration. It is impossible, for the present at any rate, to measure separately the effect of the tariff and the effect of restricted immigration on farm costs and incomes. About all we can say with confidence is that few or no manufacturers are always able to add the amount of the tariff to the prices of their goods in the home markets. They are prevented from doing so either by domestic competition, or by the fact that consumers are generally able to protect themselves in some measure against unfair prices either by turning to substitutes for the overpriced article or by reducing their consumption of it. In the main the value of tariff protection to industry consists less in its effect on prices than in the advantage it gives in the home market. This is true of agricultural as well as of manufactured goods.

It will help us to estimate the significance of the tariff in relation to agriculture if we consider not only how it works now but how it is likely to work in the near future. There is no doubt that tariff protection is most effective on commodities produced exclusively for domestic consumption. When there is a large export surplus of any article, the price of that surplus in export trade tends to set the price for the domestic supply as well. This, of course, is a truism. Frequently, however, its full application to agriculture is overlooked. It is commonly assumed that agriculture is the only American industry operating largely in foreign markets. Manufacturing industry, with its supposed independence of world conditions, is believed to be getting the last possible ounce of benefit from the tariff, unaffected by the difficulty of disposing of its surplus.

Need for Farm Protection Growing

This may have been largely true in the past. Even to-day industry does a smaller proportion of its business abroad than does agriculture. In the near future, however, the position may be reversed. American agriculture is moving steadily toward a position in which the home market will absorb more and more of its total production, whereas industry, on the other hand, is becoming increasingly dependent on export sales. In a comparatively short time agriculture is likely to have more need of effective tariff protection than industry.

A few figures will illustrate this significant tendency in our economic life. In 1901 our agricultural exports made up 65.2 per cent of our total exports. By 1913 the proportion had dropped to 43.6 per cent. There was an increase during the war to 50.6 per cent in 1919, but after the war the downward trend was resumed. In 1925 our agricultural exports dropped to 44.2 per cent of our total exports. In the year ended June 30, 1926, the proportion was only 40.6 per cent.

Meanwhile industry has been steadily increasing the proportion of its export trade. Alone among the great industrial nations the United States has increased the flow of its industrial exports since the war. Already we are exporting nearly 10 per cent of our manufacturing and mining output, compared with about 13 per cent of the production of our farms. Unquestionably, moreover, the volume of our industrial exports is destined to increase yet more. Industry has acquired an export surplus problem nearly as acute and difficult as that of agriculture. It is therefore less interested in the tariff than it formerly was.

Tariff Should be Fair

It would be in the highest degree unwise for farmers at this time to launch an attack on the tariff without carefully considering the possibility that in the near future they may need it more than any other economic group in the country. I have said that I can not venture a guess as to where the balance of advantage lies between agriculture and industry at this moment in regard to tariff advantages. That is a point that can only be settled by detailed expert analysis of tariff schedules and commodity prices. I firmly believe, moreover, that in every possible way the tariff should be made equitable as between agriculture and industry. Nevertheless, I am obliged to dissent strongly from the doctrine that the tariff is of no benefit to the farmer at the present time; and I am still more strongly convinced that the relative advantage of tariff protection will swing definitely to the side of agriculture, as the dependence of our farmers on foreign markets grows less and that of our industrialists becomes greater.

On this difficult, complex matter it is idle to advance dogmatic conclusions. In the absence of data showing the incidence of the tariff on articles purchased by the farmer, no estimate is possible as to what the tariff costs him. It is likewise difficult to determine what tariff protection on flax, sugar, wool, dairy products, livestock, and spring wheat is worth to him. We know enough, however, to be on safe ground in rejecting the unqualified assertion that the advantages of the tariff are all on the side of industry. I feel, too, that we have equally good warrant for feeling confident that tariff protection will be increasingly important and, indeed, indispensable to agriculture in the near future.

Insure Farmers the Home Market

What we should seek in dealing with the tariff on agricultural products is, as I have pointed out, to insure the home market, so far as possible, to the American farmer. He should have effective protection against foreign competition. As I have previously pointed out, labor to-day has, by means of the immigration laws, effective protection in this country. This is manifestly desirable. Among the chief reasons why the United States is better off than foreign countries are that labor is here paid well and that there is little unemployment. This is of direct benefit to agriculture. Even a very little reduction in food consumption per capita, which would come from lowered wages or unemployment, would speedily pile up bigger surpluses of farm products than have oppressed agriculture in recent years. Well-paid

labor is thus of advantage to agriculture as affording a large consuming market of high purchasing power.

On the other hand, there is no doubt that the price of what the farmer buys is substantially increased by high wages. The precise effect of high wages on the prices of articles which farmers buy has not been accurately measured, nor for that matter has the exact effect of the immigration laws on protection for labor. We may say with confidence, however, that these items are considerable. Prices are materially higher because labor is well paid, and a principal reason why labor is well paid is that it is effectively protected by the immigration laws.

The remedy of the farmer is not to break down the protection for labor, as this would be disastrous to agriculture, but to seek by means of the tariff the same effective protection against foreign agricultural competition that labor has secured in its field by means of restricted immigration. To this the farmer is beyond any shadow of doubt entitled.

Assured the home market, the farmer may utilize it in the same way that labor has utilized its advantage; namely, by producing with greater intelligence and skill and by bargaining collectively, as I have pointed out in discussing cooperative marketing.

THE CROPS OF THE YEAR

It will be useful to give here a brief review of the crops of 1926 as estimated by the department in October. Cotton and fruit, as already mentioned, were large crops. There was a good crop of wheat, a relatively short crop of corn, a production below the average of oats, rye, hay, and potatoes, and a production slightly above the average of barley, flaxseed, and beans. Crop yields per acre, in spite of early frosts in the Northwest and excessive rains in the Central States, approximated the average of the last 10 years.

Following a year of heavy abandonment, the area of winter wheat abandoned in 1926 was small, and the acreage harvested nearly one-fifth greater than in 1925. Yields per acre were above average and production was over one-tenth greater than the five-year average. Spring wheat, on the other hand, was adversely affected by drought in the Dakotas, yield was below average, and production was only four-fifths of the five-year average.

The total crop of all wheat was 840,000,000 bushels (October estimate), which was 174,000,000 bushels greater than in 1925 and 38,000,000 greater than the five-year average.

The 1926 corn crop of 2,680,000,000 bushels was 6 per cent below average and was reduced in quality by relatively early frosts and by excessive rains in the North Central States. Frost damage covered a smaller area and was less severe than in either 1924 or 1917, when the corn crop was severely damaged by killing frosts. The Southwest and Eastern States had relatively good crops of corn this year.

An oats crop slightly below average was produced on a slightly increased acreage in 1926. In October the production was estimated at 1,282,000,000 bushels. Extensive field damage at the time of harvest or after harvest affected a considerable portion of the crop, and

the quality of it was materially below average. The barley crop is estimated at 197,000,000 bushels, which is slightly above the five-year average crop. Yield per acre was cut by drought and quality was lowered by rain after harvest.

The hay crop of 93,000,000 tons was 3,000,000 below the relatively short crop of 1925 and considerably below the average crop of 101,-000,000 tons. Yields of clover and timothy and alfalfa were below average, particularly in the Great Plains from North Dakota to Kansas.

The 1926 cotton crop, from the indications of October 1, promised to be the largest on record. Acreage planted was the greatest ever known, and abandonment was only about average. The yield was fair to good in practically every State. Eight States this year each had a production in excess of a million bales. In 1914 and 1925, when 16,135,000 and 16,104,000, respectively, were produced, seven States each produced an excess of a million bales. In no other year have more than five States each produced more than a million bales. A late season was nearly made up by unusually warm, dry weather in September.

Flaxseed production was reduced by dry weather in the Dakotas. The crop was estimated at 19.5 million bushels, which was smaller than in 1925, but still above the five-year average.

The rye crop was less than two-thirds of average, owing largely to progressive reduction in acreage, but partly also to below-average yields.

Potato acreage was increased only moderately over the relatively small acreage of 1925. Yield per acreage was slightly above average and total production was 351,000,000 bushels. On the whole, the crop was well distributed, most surplus-producing areas having about an average quantity for shipment.

Production of sweet potatoes was 79,000,000 bushels, one-fourth greater than last year, but still slightly below an average crop.

Tobacco this year produced an average crop. Production of cigar-type tobacco was below average. Production of cigarette types was larger than average, but not above the trend of present consumptive needs. Pipe and chewing and export tobaccos were slightly below average, but for most types were somewhat above consumptive requirements.

The apple crop was estimated at 234,252,000 bushels. In only a few States was the crop exceptionally heavy, but production was above average in nearly all sections of the country, and the total crop was the largest in a dozen years.

The peach crop was large in all important States except Oklahoma. The crop of 67,242,000 bushels was about 40 per cent above the average and 5 per cent larger than the crop of 1915, which has been the record year.

The pear crop of 25,000,000 bushels was the largest on record. Grape production again exceeded slightly all previous crops.

Pastures were relatively short until the middle of August. Since that date they have improved greatly and provided unusually succulent fall feed.

Production of commercial truck crops in the aggregate was considerably below 1925, which was a year of generally good yields of these crops. Tomatoes and green peas for canning were particu-

larly short crops. On the other hand, lettuce and spinach crops were large. Commercial truck crops, including early potatoes, made a total of about 7,300,000 tons, compared to 7,600,000 tons in 1925.

THE WHEAT SITUATION

The world market outlook for wheat this year is better than it was last year, although domestic markets are not paying as much for some classes of wheat. Higher yields in many States, however, will more than make up in returns for the reduction in price per bushel as compared with last year for the United States as a whole.

Prospects are for a world wheat crop about the same as last year. Fortunately the increase in this crop in the United States is largely offset by a reduction in the European wheat crops. Whereas the wheat crop of the United States is 174,000,000 bushels greater than last year, European countries reporting to date indicate a production of nearly 130,000,000 bushels less than last year. Recent reports indicate that the estimates of several European countries are likely to be reduced as the final outturn of the crops become better known. Reductions in other countries have amounted to about 40,000,000 bushels.

Estimates received to date from 32 countries in the Northern Hemisphere indicate a total wheat crop of 2,944,000,000 bushels as compared with 2,939,000,000 bushels produced in the same countries last year. Reports from Russia indicate a crop about the same as last year and exports probably no larger than last year. It is too early to estimate the probable outturn of the crops of the Southern Hemisphere. Reports indicate that areas seeded are somewhat larger than last year. Seedings were made under generally favorable conditions. Average yields in Argentina and Australia would result in crops slightly larger than last year.

Although reports to date indicate a world crop, outside of Russia and China, about the same as last year, the market demand for wheat from these countries is likely to be stronger than last year. An increase in the demand from the Orient may be expected on account of poor crops in parts of Manchuria and China proper. The European demand is likely to be greater on account of a considerable reduction in the production of rye and some reduction in the potato crop. The estimates for rye in 24 countries in the Northern Hemisphere reporting to date total 838,000,000 bushels, a reduction of 143,000,000 from the estimated production of these same countries last year. The extent of the reduction in the potato crops of northern Europe has not yet been estimated but it will probably be sufficient to increase the demand for wheat.

On Export Basis

Increased production has placed all classes of wheat in the United States this year upon an export basis. Considering the several different classes of wheat separately, it seems probable that the market for durum wheat will be better than last year. The north African wheat crop, a considerable percentage of which is of hard wheat competing directly with durum in the Mediterranean markets, is smaller than last year. Although it can not be ascertained from

statistics to what extent hard-wheat production has been reduced, it may be assumed that the production of that class of wheat is at least no greater than last year. There has been a considerable reduction in the production of hard wheat in Italy, which will increase the demand for hard wheats from other countries. With no greater competition to be expected from Russia and some reduction in our own durum crop, the demand for this wheat should be stronger than last year.

The estimated production of hard red spring wheat appears to be just about equal to the amounts consumed annually in the United States. The market for this class of wheat, however, is at present approximately on an export basis, with the price at Minneapolis about the same as the price at Winnipeg. As long as supplies seem sufficient for domestic requirements our markets for this wheat will remain close to an export basis.

The effect of a shift from an import basis last year to an export basis this year is shown by the change in relation of price at Minneapolis to price at Winnipeg. The second week of September of last year, for example, the average cash close price of No. 1 Dark Northern Spring at Minneapolis was $1.59 as compared with $1.37 for No. 1 Northern Spring at Winnipeg, whereas, in the corresponding week of this year the price of No. 1 Dark Northern Spring at Minneapolis was only $1.46 as compared with $1.45 for No. 1 Northern Spring at Winnipeg.

Exports of Wheat

From the 1925 wheat crop and carryover of old wheat on hand July 1, 1925, the United States exported 63,000,000 bushels of wheat, and flour equivalent to 45,000,000 bushels of wheat. For the manufacture of the flour exported, we imported in bond from Canada 13,000,000 bushels of wheat, and 2,000,000 bushels for domestic consumption on which duty was paid. Thus our net exports in the form of wheat, grain, and flour, amounted to the equivalent of approximately 93,000,000 bushels of wheat. In doing this, however, the accounted-for stocks of wheat were reduced by approximately 22,000,000 bushels between the beginning of the year, July 1, 1925, and the end of the year, June 30, 1926, thus reducing the exports from the 1925 production to 71,000,000 bushels of wheat and flour manufactured from domestic production. In the export statistics no distinction can be made between the new wheat and the old wheat, nor can the exports of flour be distributed by classes of wheat used in its manufacture.

The 63,000,000 bushels of wheat exported as grain may be classed about as follows:

	Millions of bushels
Hard red spring	10
Durum	21
Hard red winter	11
Soft red winter	3
White	18

A large part but not all of the exports of all classes except Durum was from the Pacific Coast States.

If we did not have a tariff, Canadian wheat would come over the line in greater quantities than it is now coming over, with prices as

they are now. In other words our hard spring wheat is now receiving some degree of tariff protection. Winter wheat growers likewise benefit from the tariff. This is true even when the domestic price of wheat is not above the export level. But for the tariff, much wheat from Kansas would be displaced at Buffalo by wheat from Canada.

THE DAIRY INDUSTRY

On the whole the dairy industry has been in a fairly strong position during the last year. A favorable spread between milk and feed prices has encouraged eastern dairymen. Their view of the situation has been shown in rather high prices paid for cows. Indications are that an increasing number of heifer calves are being raised. Many cows have been slaughtered in the East in antituberculosis campaigns. Conditions have perhaps not been quite so favorable for western butter producers, butter prices having shown relatively less strength than whole-milk prices.

An element of strength in the dairy situation has been a declining rate of increase in production. There was an increase in milk production in 1925 of only 2 per cent over the amount produced the previous year, compared with an average increase of 5 per cent in the last few preceding years. In the early part of 1926 there was a tendency for butter production to resume previous yearly rates of increase. This tendency, however, fell off as the year advanced. After the flush period of summer, the lead established in output was again lost. The trend toward lower production has tended to offset the effect of large stored surpluses.

The 1926 storing season opened with a rather heavy carryover. As the season advanced there was again a tendency toward the holding of a large storage surplus, corrected in part by the downward movement of production. A high record of holdings of butter in cold storage had been reached in the fall of 1924, when 156,000,000 pounds were reported in the warehouses. This situation resulted in large part from unusually favorable weather and pasture conditions. The accumulation, however, was cleared off before the opening of the season in 1925. Holdings of butter in cold storage on September 1 for the 1925–26 season were large (128,000,000 pounds), but they were not the result of an exceptional carryover from the previous season.

No Foreign Competition

Foreign competition has not embarrassed our dairy industry this year as it did in 1925. Toward the end of that year the foreign situation exerted a depressing influence. There was a possibility of considerable importations of butter. In fact some foreign shipments arrived in spite of an 8-cent tariff duty. Although these imports were not large enough materially to affect the home market, psychological influences due to these imports and to the possibility of others remained in evidence until a change occurred in January in the foreign situation, as a result of which the prospect of substantial importations of butter disappeared. In April the tariff on butter was increased to 12 cents. Since that time butter imports have been of no consequence in the American market.

lasting efficiency it would seem that the opportunity of a generation lies just ahead.

One of the problems of commerce has always been to develop a common trade language, understood alike by buyer and seller. The department has worked out a set of standard market classes, grades, weight, and age groups for both cattle and beef which in all probability will be promulgated as official United States standards. We have used this system in the conduct of our market reporting service on livestock and dressed meats for the past seven years, and it seems to have given entire satisfaction.

Western Range Problems

How to make the Western livestock industry more stable is part of the general agricultural problem of the country. No industry which uses the soil for production can be stable unless it is going to stay in the same place and unless the land that it uses is going to maintain its productiveness. Temporary land occupancy and declining range productivity have been outstanding features of western livestock production. The industry has had to move on before the settler, has grazed the open public domain on sufferance, has had to yield possession almost everywhere to those wishing the land for any other purpose, and has, broadly speaking, been confronted with a decline in the carrying power of its vast but diminishing and overcrowded ranges. Provision for permanent grazing use of such lands as will have highest value if employed in this way, for reasonable assurance to the individual stockman who is making use of the land that he will not be arbitrarily or unnecessarily dispossessed, and for insuring that lands employed for grazing will not lose their carrying power is necessary to give the range-livestock industry its fair chance at stable prosperity.

There are two possible ways to go about doing this. One of these is to let economic competition for possession of the land determine who shall have it, and enlightened self-interest solely govern the methods of use. Where the range is privately owned, this takes place. The traditional policy of the United States with respect to its public lands almost to the close of the nineteenth century assumed that private ownership was the best if not, indeed, the only way to get land rightly used. But the conservation movement brought another viewpoint. Under private ownership the right use of mountain lands, it was perceived, is not very likely to come about. Water, timber, and forage are too closely interrelated, and permanency of water and timber supplies is too important to other interests and industries to leave to chance. So some 90,000,000 acres of public lands suitable for grazing along with use for timber and water production are included in the national forests. On these lands the range livestock industry must be given a place, and its stable prosperity must be sought. But the way must be through enlightened public regulation and not by conferring of property rights to or in the land and then depending upon the play of self-interest and economic competition to determine how and by whom the land shall be used.

New Law Sought

There is a certain degree of grazing use which these lands can be given without injury to timber growth, water flows, or the range

itself. There are certain methods of use which make possible the largest returns to the users and to the community. Only as all of these questions are worked out and worked out right can regulation stabilize the western livestock industry along sound lines.

Primarily at the instance of the western livestock industry, the enactment of a law was sought this year defining the place of grazing in national forest management and providing greater assurance for the stockmen against unnecessary changes of administrative policy or arbitrary or unfriendly exercise of administrative powers. After protracted hearings by a Senate committee and full discussion of the subject with this department, a bill was introduced which in my judgment essentially provides what will best meet the real needs of the livestock men with respect to the national forests, and also tends to facilitate sound administration of the forests in harmony with their major purposes of timber production and water conservation.

The same bill made provision for regulated use of the open public range. There are about 180,000,000 acres of unallotted and unreserved public lands of so low value that no law permitting their private acquisition has ever been liberal enough to make patenting them worth while. Of these lands about 130,000,000 acres are grazing lands. That they have to a large extent lost their original carrying capacity, that further deterioration is extensively taking place, that under present laws deterioration is bound to continue, and sooner or later to reduce the grazing to no value at all, and that there is not only the physical waste of the resource but also the further waste due to faulty coordination with other resources employed in livestock production, has been again and again pointed out. In my report of last year I expressed my conviction that the existing policy with respect to land utilization on the public domain has had much to do with the recent troubles of Western agriculture, and called attention to the agreement of opinion among interested persons and agencies that a far-reaching change in that policy is imperative. For these lands enlightened public regulation offers not only the best hope of the livestock industry for more stable conditions, but virtually the only hope. I believe that the enactment of legislation to make such regulation possible is one of the important things needing to be done for the benefit of Western agriculture, and I hope that, in such form as may be found to be most appropriate, the general purposes embodied in the bill now before Congress may be carried to conclusion.

LEATHER CONSERVATION

Plans for a nation-wide campaign to improve the quality of raw hides and skins used in making leather were outlined by the United States Department of Agriculture and approved at a recent conference by representatives of farmers, cattlemen, dairymen, butchers, hide dealers, tanners, and shoe manufacturers. Millions of dollars are annually lost to producers of the raw material and consumers of finished leather goods through imperfections in raw skins and hides which result from faulty skininng and curing, careless and excessive branding, and the effects of diseases and parasites.

An enormous quantity of leather is used in this country for shoes and harness, 300,000,000 pairs of shoes being bought each year at a cost of more than $1,500,000,000. Production of a better quality of raw material for leather making would avoid serious waste.

In line with the department's plan to eliminate waste and improve the quality of raw material, an advisory committee has been appointed to work primarily on the economic aspect of the several technical problems and to enlist cordial support for the campaign. Other committees will work on the problem of grubs, insects, diseases, and branding; on the problem of skinning and curing; on classification and marketing; and on statistics.

The elimination of grubs, ticks, and other insect pests, and the prevention and cure of diseases will pay the farmer and cattlemen well in increased milk and beef production. The department has long fostered such movements as a means of increasing the profits to livestock men. The leather industry and allied interests will add the force of their publicity and educational campaigns to encourage these practices, first as a means of producing healthier and more profitable livestock, and, second, to secure a better quality of hide.

Loss From Cattle Grub

The loss due to the cattle grub has been estimated at from $50,000,000 to $100,000,000 annually, a loss which is felt by several industries. Dairymen have estimated that a reduction of 10 to 25 per cent in milk flow is often due to irritation by the grubs. The growth of young stock is retarded and their vitality is reduced through grub infestation, and cattle raisers and feeders suffer losses accordingly. Butchers and packers lose money on hides that have grub holes in them, hides with five or more holes in them being discounted, according to trade custom, 1 cent a pound. The tanning industry as a whole prefers grub-free hides. For certain uses a single hole in the hide makes it unserviceable. The grubs perforate the skin along the back of the animal, thus damaging the portion which is of the greatest value when the hide is tanned, and the extra handling of hides necessary in classifying them as to grubbiness is an economic loss.

Faulty skinning and curing are also responsible for great annual money losses, especially in those hides taken off and cured on the farm and ranch, or by town and country butchers. The department has repeatedly emphasized the fact that this condition can be remedied only by making it more profitable for these men to take more care in skinning and curing. Premiums for quality hides would be an incentive for more care. The practice of hammering down the price of a hide simply because of its "country" origin must be eliminated, if improved methods of skinning and curing are to become effective. "Flat" buying of country hides must go before general improvement can be brought about. It will be the duty of the committee on this subject to work out, through cooperation with the department and other agencies, practicable ways of improving the methods of skinning and curing in the country and to keep this information constantly before the public through the agricultural and trade press.

SWINE PRODUCTION AND PRICES

Swine producers have enjoyed favorable conditions for the last two years. Although corn was high in price during 1925, hog prices for the most part showed compensating advances. The situation was still more favorable during the first eight months of 1926. Corn was then relatively cheap and hogs continued high. The average price of hogs slaughtered under Federal inspection during the first eight months of 1926 was 70 cents a hundred pounds higher than in 1925, and $3.80 more than the average price for the preceding three years. This favorable price situation was partly due to light supplies of hogs. Receipts at the principal markets during the first eight months of 1926 were approximately 3,250,000 head less than in 1925, and 10,250,000 less than the record run of 1924. The run, in fact, was the lightest for these months since 1917.

From the standpoint of the swine producer, the situation was even more favorable than the figures indicate. Pork production during the first eight months of the year, in spite of the decreased slaughter, exceeded production in the first eight months of 1925 by more than 108,000,000 pounds. This was chiefly due to the fact that the average live weight of hogs slaughtered was 18 pounds per head greater than in the previous year. In other words, swine producers in 1926 marketed much more pork and obtained considerably higher average prices than in 1925.

It is, of course, impossible to discuss the hog situation without considering the corn problem. An analysis of the present relationship between corn and hog prices and of the trend in hog production indicates that swine producers can not expect to maintain indefinitely their present degree of prosperity. Indications are that hog production will be substantially larger in the next year or two and that the increased production will be accompanied by somewhat lower prices. Swine producers should carefully measure the expansion of their operations by production costs and by the prospective demand for pork and pork products. Only in that way can they bring about a balanced situation in which hog production can be kept profitable.

CORN

During the past year the farmers in the Corn Belt have had a surplus of corn. The price received by the corn producers of the United States for the crop year 1925–26 averaged only about 70 cents a bushel, the lowest since 1921, a year of extreme depression. This price is equivalent to only 45 cents on a pre-war price basis. The immediate effect of these low prices was greatly to reduce the purchasing power of the farmers who produce corn primarily for market. On the other hand, those who had hogs to feed profited by the large corn crop, and most farmers in the Corn Belt fed hogs or cattle.

Corn is not as easily exported as are other cereals; usually less than 3 per cent of the crop finds its way to foreign markets in the form of corn, and even in years of heavy production it seldom exceeds 5 or 6 per cent. Corn is finally exported, however, in the form of pork and pork products. About 18 to 20 per cent of the pork killed under Federal inspection is exported.

The effects of a surplus corn crop are usually felt in two different ways—currently by low corn prices, and a year or two later by an increase in the production of hogs, and consequently lower hog prices. To advise a farmer to raise more hogs because corn is cheap and hogs are relatively high is bad advice, for by the time he has raised more hogs to eat cheap corn, the hogs have become cheap and the corn high. The usual reaction of Corn Belt farmers is to do this very thing. Instead of planting less corn when corn is cheap and holding hog production down to a point where hog prices are on a fairly profitable level, the tendency is to plant about the same acreage of corn the next year and increase the number of hogs.

The production of 2,905,000,000 bushels of corn in 1925 was not the largest crop on record by 300,000,000 bushels. In fact, it was only 55,000,000 bushels above the 10-year average production, and the carry over from the 1924 crop was unusually small. The difficulty was not so much with the size of the 1925 crop as it was with its geographic distribution. Ordinarily about 65 per cent of the corn crop is produced in the 12 North Central States commonly spoken of as the Corn Belt. It is from about 9 of these 12 States that most of the surplus corn of the United States is shipped from the county where grown. Most of the remaining 39 States produce less corn than they use. When they are short of corn to feed, other concentrates are substituted and less grain is fed.

Increased Hog Production Likely

It is now apparent that the abundance of corn in the Corn Belt with low prices is to be followed as usual by the production of more hogs. The pig survey of June, 1926, showed that farmers intend to materially increase their fall farrowings this year, thereby initiating the first stages of another cycle of increased hog production at a time when hog prices are not sufficiently above the level of the prices farmers pay for commodities to warrant any increase whatever. Corn acreage planted in 1926 was reduced less than 1 per cent. Although there is a larger carry over of old corn and prices are still very low, the worst of the corn surplus situation is probably passed, and it will be only a question of a year or two from this winter when a surplus of hogs will be the topic of the hour.

At this writing a corn crop for the present year of about 2,700,000,000 bushels is indicated. If this forecast is borne out, the crop will be about 7 per cent below last year's large harvest and 5 per cent below the average of the last five years. The demand for corn will probably be better this season than it was last, in view of the prospect that hog production will be increased, although exports of corn are likely to continue small. European demand for American corn has been restricted by the presence of liberal quantities of barley and oats on the European markets and also by the fact that a large surplus of corn has been available for export from Argentina. Crops of feed grains are good in Europe this year, and the competition of Argentine corn will undoubtedly continue.

SHEEP

The sheep and lamb industry continues to prosper. Expansion of the industry has been going on during the last few years. According

to the best available estimates, there were approximately 4,500,000 more sheep and lambs in the country on January 1, 1926, than at the low point of production, which was probably reached in 1922. This expansion has progressed steadily and in general has been conducted intelligently. During the process a fair proportion of each year's production seems to have been fed into the consuming market. Although, as is always true, lamb prices have fluctuated widely and sharply over short periods of time, average prices have been held at a level which has made possible sustained or increased consumption.

Market receipts of sheep and lambs during the first eight months of 1926 exceeded similar movements in 1925 by nearly a million head. Federally inspected slaughter, however, showed an increase of less than 400,000 head, the difference between these two figures being largely accounted for by increased movements of stocker and feeder animals back to the country. This tendency to relieve the pressure on the consuming market has maintained prices at a level which as a rule has compensated the producer for his efforts. The holding back of ewe lambs to increase breeding flocks has also had a tendency to keep supplies within bounds at market centers.

Early in 1926 lamb feeders were confronted with what promised to be a serious problem, arising chiefly from the fact that feeding lambs were generally heavy when put into the feed lots the autumn before and had done well during the winter. More heavyweight, fat lambs were available than the market could readily absorb at prevailing prices, and consequently the market broke rather sharply. A combination of circumstances, combined with efforts on the part of various market agencies and the Department of Agriculture, brought about a material increase in the consuming demand for lamb. Prices righted themselves to the extent that in June a sharp advance occurred, which carried top lambs well about the $17 mark.

A 10 Per Cent Increase in Lamb Crop

A survey conducted by the department in June indicated an increase of about 10 per cent in the 1926 lamb crop as compared with that of a year earlier. This would seem to indicate a considerable increase in the number of lambs which will normally come to market during the latter part of the year. In all probability there will be a gradual lowering of the market price level as the effects of the expansion which has been going on during the past two years become apparent in materially increased market receipts. There seems to be little if any cause for anxiety, however, provided sheepmen conduct their operations in the light of probable future prices and costs, rather than with their attention fixed on prices which have prevailed in the past during periods of scarcity.

THE COTTON SITUATION

The present statistical position of cotton indicates a considerable reduction in returns to growers for the crop now being harvested. The large crop of 16,100,000 bales produced last year yielded a return to growers somewhat less than the crop of the previous year, which

amounted to only 13,600,000 bales. This year's crop, according to the October 1 forecast of 16,627,000 bales, is greater than that of last year, and stocks at the beginning of the new crop year were so much greater than at the beginning of last year that the total supply for the year is considerably larger than last year.

Prices to producers at the beginning of the season, as of August 15, averaged only 16.1 cents, compared with 23.4 cents last year, and have declined sharply since the beginning of the season. This decline in price brings the southern producers face to face with a cotton-surplus situation. Sixteen cents for cotton is equivalent to only about 11 cents per pound before the war, which is lower than the average price received for cotton in the period 1909–14. The recent low level of 12 cents is equivalent to only 8 cents before the war.

To realize the significance of this fact, it must be noted that there has been considerable increase in the cost of producing cotton on account of the boll weevil, which before the war had spread over only a part of the Cotton Belt. Last year, according to reports from 1,400 farmers in the Cotton Belt, the average cost per pound to producers of cotton lint was about 18 cents.

Developments Not Favorable

Developments of the last year have therefore not been favorable to cotton growers. Two years ago supply and demand were nicely balanced and prices were satisfactory. Last year the final acreage harvested was increased 11 per cent over that of the year before and the season's crop exceeded the total consumption by a little more than two and a quarter million bales. This year the acreage in harvest is computed at an increase of 2.7 per cent over that finally harvested last year. Weather and insect conditions on the whole have favored the plant and another large crop has followed. This crop, estimated to be the largest ever produced in this country, is now moving to market at prices lower than those of any crop since 1921. Reliable figures on the cost of making the present crop are not yet available. There is little question, however, that present selling prices of cotton at the farm are less on the average than costs of production.

Last year's crop was notable for its unfortunately large percentage of low grades and its small proportion of high and medium grades. Opened cotton was exposed throughout much of the belt to early and prolonged rains and the damage to the quality was extensive. For a time these low grades were in little demand and could be sold only at large discounts. Fortunately, it was found under pressure of necessity, that in many of the mills certain of these lower grades could be satisfactorily substituted in part for some of the higher grades which had formerly been required.

It must be counted as fortunate under these circumstances that other conditions have favored large consumption of cotton. The world used last year, according to the best obtainable figures, some 13,800,000 bales of American-grown cotton. This is about a million bales more than were spun in the previous season and is the largest consumption recorded since the year 1915–16, when industry was striving to meet the necessities of the war. The present marketing

season which dates from August 1, 1926, finds both exports and domestic consumption running larger than they were a year ago.

Compensation for Future

While on the whole the present season must be put down as an unprofitable and a disappointing one to the average individual grower, it may be possible after all to find in it some compensations for the future. By no means the least of these is the fact that the current price should and doubtless will serve to discourage the development and organization of cotton production in the newer cotton areas of the world and reduce as well the American acreage. In recent years, much effort has been put forth in other countries to establish cotton growing on a permanent basis. Although up to this time these endeavors have been notable for the rather negligible success that has rewarded them, they have suggested enough of future competition to attract some attention.

It is observed in periods of low world prices for cotton, that interest in the crop among the cotton growers of foreign countries rapidly subsides and that investment in ginning, handling, and transportation facilities necessary to the permanence of the industry is discouraged. Our crops of this year and last have dispelled much of our own fear of the menace of insects to the future of our cotton industry and stand as a demonstration to ourselves and to the world of the productive power of our Cotton States. One important effect of large supplies and low prices must inevitably be to expand the use and consumption of cotton. It is estimated that the products of cotton are now used for about 10,000 purposes. It seems reasonable to believe that at lower prices, the uses of cotton will be increased and its adaptation to new purposes encouraged.

Place of Cotton in Export Trade

Cotton growing is the chief branch of agriculture in a large section of our country, and cotton is one of our great national assets, standing first in value among all of our exported commodities. The welfare of the cotton grower should therefore be guarded and fostered as a matter of wide national concern. On this view the department has continued to work. Intensive studies have been carried into the economics of the industry, with a view of learning the extent to which the consumption of our cotton may eventually go and of determining what types and varieties of cotton lie within the field of most profitable production. It has been possible to broaden and energize some of these lines of study by cooperation with southern agricultural colleges.

Need of Low-Cost Production

A season of low prices enforces the lesson to the farmer of making his production of cotton as efficient and economical as possible by planting only in fields that will grow good crops at low cost and reducing other expenses by practical diversification. The high production costs are on the small crops, grown on land that should be used in other ways. It is estimated that the present volume of cotton production could be maintained on at least a third fewer acres by

intelligent application of improved methods, with an enormous saving in costs of production. Farmers who produce economically may be disappointed in their profits but may escape positive losses, even at prices that are ruinous to less competent neighbors.

The possibilities of a fundamental reform of the system of cotton production have been recognized and demonstrated by the work of the department in cooperating with communities of cotton growers that limit themselves to the production of a single variety. In such communities many improvements of production are feasible that otherwise are beyond the reach of the individual growers.

In organized one-variety communities all of the farmers are provided with select seed of pure and uniform quality. From the use of pure seed larger yields are obtained, as well as fiber of better and more uniform quality that can be sold at higher prices. Through the production of commercial quantities of uniform fiber a constructive solution of the marketing problem is made possible. In such communities improved varieties and methods are adopted, and greater skill and efficiency of production are developed. The effects of different conditions and methods of handling the crop are better understood where farmers are familiar with the behavior of one variety, instead of continually changing the varieties, mixing the seed, and depreciating the product, as in unorganized communities. Such a policy, combined with proper diversification, should be adopted in many more cotton-growing communities. Business as well as agricultural organizations would find it to their advantage to promote the movement.

PRODUCTION OF LONG-STAPLE COTTON

The marketing of the American cotton crop begins with its planting on the farm. Production and marketing are interdependent. The better the product, the more thoroughly it fits demand, the easier it is to market. The world demands good strong cotton of the American upland type, ranging from 7/8 inch to 1 1/16 inches in length of staple. We are not meeting this demand as fully as we formerly did. The production of short-staple cotton in the United States has been increasing, and the "bread-and-butter lengths"—the 1-inch, 1 1/16-inch, and 1 1/16 to 1 1/8 inch staples—are becoming a smaller proportion of the crop. It is estimated that more than a million bales, or about 8 per cent of the crop produced last year, consisted of cotton less than 7/8 inch in length of staple. Manifestly this is not desirable.

Economic pressure on the large cotton-consuming countries has induced them to encourage the production of medium-staple cotton in countries other than the United States. Brazil, for example, is pushing her cotton enterprises. There is, however, no need for immediate alarm over this fact. The Brazilian people need more cotton for their own use. Moreover, there is every probability of an increased demand for cotton throughout the world with the return of prosperity in Europe. At the same time it should be frankly recognized that an increase in the production of good upland cotton in foreign countries will make the production of excessively short-staple cotton in the United States less and less remunerative. Our opportunity lies in adjusting the quality as well as quantity of our

output to the world's needs. This applies to cotton just as it does to every other product.

Quality is Important

Under modern conditions quality is exceedingly important. In every field of agriculture or industry quality goods—goods that exactly meet the public demand—can ordinarily and should bring a premium. European consumers have complained recently that there has been a falling off in strength and uniformity of American cotton—in short, that it lacks some of the quality that they want. There is a belief that the introduction of the small-boll, quick-maturing varieties, high in per cent of lint, is the main cause of the difficulty. These varieties, from the standpoint of lint percentage, may have an advantage as to yield. It is not at all certain, however, that they yield more lint per acre than varieties having a good inch staple. An example to the contrary was recently brought to light when a Southern newspaper announced that the winner of its "more cotton on fewer acres" contest had grown in excess of sixteen 500-pound bales on 5 acres of land, and that the staple of the cotton was $1\frac{1}{16}$ inches. Furthermore, plant breeders have developed varieties of good medium staple that give yields equal to or superior to the varieties producing extra-short staple. They are also equal in earliness of maturity.

The boll weevil, against which our cotton farmers have waged so valiant a fight, need not put an end to the production of long-staple cotton. The development of new early-maturing varieties and the discovery of improved cultural methods of shortening the growing season are making it possible to produce excellent crops of long-staple cotton in the presence of the boll weevil. Indeed, there are additional reasons for growing long staples under weevil conditions. The care and precautions that are required to protect cotton against the weevil also make it possible to produce a better staple. In growing long-staple cotton the growers may find compensation for the increased cost of production or the diminished yield that may be caused by the boll weevil.

Farmer Not Encouraged

The main reason why the less desirable varieties are grown in large quantities is that the average farmer can not sell better cotton for a better price. The principle that quality goods should bring a premium has been overlooked in cotton buying, so far as the average farmer is concerned. There is a substantial difference in value between a bale of $\frac{3}{4}$-inch cotton and a bale of $1\frac{1}{16}$-inch cotton. In the hands of a shipper this difference may be $15 or more. Growers who sell their cotton in small lots at country markets, however, often can not obtain any better price for medium than for very short-staple cotton. Good staple and poor often sell for about the same figure, which is based upon the average quality of the cotton sold at the primary market point. Under such conditions the grower has no incentive to produce superior cotton. Indeed, the situation tends to curtail the introduction of new methods,

practices, or varieties by the farmer. When the same price is paid for good as for poor fiber at the primary markets, the progressive farmer is penalized and the short-sighted farmer is benefited.

The Department of Agriculture has done what it could to discourage the planting of varieties which yield the very short staples. But the remedy requires the attention of cotton buyers quite as much as that of cotton growers. A marketing system which penalizes the production of better varieties of cotton should obviously be modified. The only secure basis for our cotton industry is in the improvement of the product.

Cash for Quality Necessary

There is no way to improve the product except by furnishing cash encouragement for quality. Discrimination in buying is just as important as high prices. Upland long-staple cotton brings from 30 to 60 per cent more than middling short staples. Farmers who produce the long-staple kind should in simple justice be rewarded proportionately. It is useless from the standpoint of encouraging quality production merely to get manufacturers to pay more for good fiber. The premium for superior fiber must go back to the farmers. Community production of better cotton would go forward more rapidly if farmers were sure of better markets for good cotton than for short fiber. It is in the interest of the cotton trade to give them this assurance.

THE PRINCIPAL FRUITS AND VEGETABLES

Bumper crops of nearly all fruits were the rule this year, with quality very good. In October it appeared that the commercial apple crop would amount to 38,500,000 barrels, the heaviest commercial production on record. Western States were expected to have the equivalent of some 14,600,000 barrels, or about 1,000,000 more than the year before, while Eastern and Midwestern producing sections seemed to have about 23,900,000 barrels, an increase of 4,900,000 over the 1925 crop. Record crops were anticipated in the leading States, Washington and New York. Wide distribution was being given the apple shipments.

The peach crop was estimated in October at around 67,000,000 bushels, slightly above the previous highest record established in 1915. Production was about 44 per cent greater than the 1925 crop and than the average for the last five years. Georgia growers had difficulty in obtaining average returns above the cost of production and preparing the crop for market. Shipments from that State reached the unprecedented total of 17,500 cars. California canneries put up a record pack of this fruit.

The pear crop of 25,000,000 bushels was far above average and at least 25 per cent heavier than the year before. Grapes were expected to break all previous records, with a total of 2,360,000 tons. More than the usual quantity of the California product was dried. Not only was the California crop vastly increased, but eastern grapes came back with a heavy yield after the short production of 1925. The Ozark grape region is becoming of commercial importance.

Potatoes did somewhat better than last year, but a total crop of 351,000,000 bushels, as indicated in October, would still be 45,000,000 less than the five-year average and 74,000,000 bushels below the exceptionally large crop of 1924. Per capita production appeared to be around 3 bushels, which is below normal requirements. Acreage was increased only about 2 per cent, and average yields of 108 bushels would be very little better than the average for the five years, 1921–1925. The midseason potato supply was heavier than in 1925, when drought reduced the crop, causing this year's prices for a few weeks to be lower than those of the preceding season. It is hardly expected that the extremely high returns of 1925–26 will be repeated this season, even though the main crop is moderate.

Sweet-Potato Production Greater

Sweet potatoes were coming back to normal after several years of light production. October estimates indicated 79,000,000 bushels, which would be a crop of little above midway between that of 1925 and the five-year average of 84,000,000 bushels. Improvement was noted in practically all the States which lead in the production of sweet potatoes.

More main-crop onions and cabbage were being produced than the year before. Midseason cabbage and onions, however, found a very dull market, partly because of the abundance of home-grown supplies. Melons were a good crop, but prices were unusually low. Cantaloupes produced well except in California, and such truck crops as lettuce and celery were increased. It is questionable whether greater production of lettuce can be marketed with a profit to growers. Car-lot movement of 38 fruits and vegetables during the calendar year 1925 filled about 980,000 cars.

FOREIGN MARKETS

Foreign demand for some of our agricultural products was stronger in the fiscal year 1925–26 than in the preceding year, while for other products it was somewhat slack. The value of the exports of agricultural products, excluding forest products, was 17 per cent less than for the previous year but remained larger than in any other year since 1920–21. On the basis of 1909–1913 prices, the volume of agricultural exports declined 20 per cent.

The agricultural share of our exports of the last fiscal year was the lowest in our history except in the war years 1916–1918. In value the exports of agricultural products exclusive of forest products amounted to somewhat less than 41 per cent of all exports, compared with 48 per cent last year and 32 per cent in 1916–17, the lowest previous record.

The reduction in volume of exports in the past year was due largely to a short wheat crop and to a greatly reduced production of pork. Our wheat crop was so small that our exportable surplus was greatly reduced. Large crops of feed grain in Europe and cheap corn from Argentina reduced the demand for our feed crops so much that we exported only 23,000,000 bushels of corn, at an average value of 92 cents a bushel, out of a very large crop.

Having reached the low point in a hog-production cycle, our exportable surplus of pork products was likewise considerably reduced. The exports of bacon and ham from the United States declined considerably in volume but the value of the shipments was fairly well maintained. Declines were registered in the exports to practically every important market and particularly in the shipments to the United Kingdom. Lard exports also showed marked declines. Shipments to all important European markets fell off, but Latin-American countries, which are assuming more importance in our lard trade, all took larger quantities except Cuba.

The demand for cotton was not so good as last year. The exports were 227,000 bales less at a price so much lower that the value of our exports of cotton was only $918,000,000 compared with $1,061,000,000 the previous year. Had Japan not come into the market and taken a much larger quantity than usual, there would have been a considerably larger reduction in foreign takings. Depressed economic conditions and a weak export market for cotton goods considerably reduced the demand in the United Kingdom and Germany.

More Tobacco Exported

More tobacco was exported from the United States at higher prices last year than in 1924–25. The increase in the volume and value of the exports of bright flue-cured tobacco, the principal cigarette type, was particularly noteworthy. This type last year made up over 60 per cent of the total exports of leaf tobacco. The United Kingdom continues to be the leading market for American leaf tobacco, taking 35 per cent of the shipments from this country last year, while China was the next largest market taking 18 per cent. The increase in the shipments of cigarette types of tobacco to China is the feature of the United States exports of tobacco.

Fruit constitutes the only important class of agricultural products, outside of tobacco, to show any appreciable increase in exports during 1925–26 over the preceding year. The total value of the fruit exports, including fresh, dried, and canned, was $105,000,000 last year as compared with $85,000,000 in 1924–25.

In spite of unfavorable conditions in the United Kingdom, the principal market, the exports of apples from the United States showed an appreciable increase over the preceding year. This increase in volume and value of exports seems more remarkable considering the fact that in England there was a large amount of publicity charging excessive arsenic spray residue on American apples. This accomplishment in the face of agitation against American apples must be attributable in part at least to the diligent work of the department's representatives in the principal European markets. By keeping in touch with the market and keeping European importers informed concerning American supplies they were able to minimize the agitation against American apples. They were able at the same time to convey to American growers' organizations and exporters the critical necessity of taking double precautions to ship clean fruit abroad.

German Market Improved

Market conditions in general are improving in Germany and the immediate outlook for raw cotton and foodstuffs is better than it

has been at any time since the war. The improvement in the German market for dairy products is a very important factor in the world's dairy markets. In the past year Germany has taken, and is continuing to take, large quantities of Danish and Siberian butter. This has been an important factor in keeping foreign butter from our markets. Denmark is finding a better market in Germany near at hand than in New York after transportation and duty. Australia, New Zealand, and Argentina are finding outlets in England for their butter, at prices better than they could receive in New York after paying the duty, because British markets are being relieved of considerable amounts of Danish butter which has gone to Germany.

Conditions of foreign demand in other countries are in general about the same as last year. England is still experiencing a depression on account of the coal strike. Recovery of general prosperity and purchasing capacity will necessarily be slow. Economic conditions in France, Italy, and many of the smaller countries are unsettled. Efforts of the Governments in France, Italy, and Belgium to strengthen the currencies, if successful, may be expected to improve prosperity in the future, but may result in a temporary check upon business activity, and hence a temporary restriction upon those markets for American raw cotton and foodstuffs.

Larger Exports

The United States is producing this year larger exportable surpluses of wheat, cotton, and apples. Whereas last year our net exports of wheat, including flour, amounted to only 93,000,000 bushels, we are likely to have available for export this year nearly 200,000,000 bushels of wheat. We need foreign markets for a considerable part of the increase of 27,000,000 bushels in our commercial apple crop, as also for the increase of more than a million bales in our cotton crop. Fortunately for our farmers, Europe exclusive of Russia, according to latest estimates, is harvesting a wheat crop 140,000,000 bushels less than last year and a rye crop 131,000,000 bushels less than last year. The north African wheat crop is also 14,000,000 bushels less than it was last year. It seems, therefore, that the foreign demand for our wheat will be better than it was last year. Although favorable conditions in the Southern Hemisphere to date indicate possibly greater competition from that source, we ought to be able to dispose of our exportable surplus of wheat without depressing the world wheat market.

Some reduction in apple production in northern and northwestern Europe has left a market for more of our apples. Reports to date indicate that the foreign production of cotton may be less this year than last, but not sufficiently less to effect a material increase in the demand for our cotton. In fact, we produce such a large proportion of the world's crop that the size of our crop practically dominates the world market.

Prospects for European markets for corn, oats, and barley as feed grains are not so good as last year. Europe has harvested a large crop of oats and is harvesting a fairly good corn crop. Adding the three crops together, the present prospects are that Europe exclusive of Russia will have an increase of at least 5 per cent in the tonnage

of these crops. Argentina is planting a new corn crop and it is too early to determine how much competition one may expect in the European markets from this source. The crop that was harvested there last April and May was the largest that that country had produced since 1914, and some of that crop will compete with this fall's United States crop in European markets.

Pork Production Stimulated

Larger feed-grain crops and consequently lower prices will undoubtedly stimulate an increase in pork production in Europe just as last year's large crop is inducing farmers to plan to produce more hogs in the United States next year. Conditions for marketing our pork products in Europe should remain favorable for a short time, but increased pork production in this country is likely to be met by increased competition in foreign markets.

The total foreign trade of the United States in dairy products has been declining since the abnormal trade of the war period, in spite of a steady increase in domestic production. Figures for the year ended June 30, 1926, indicate a continuance of that decline and also illustrate the tendency of imports into the United States to exceed exports by an increasing margin. This situation, however, is always open to the possibility of being reversed with the acceleration of the tendency toward increases in domestic production. While world production since the war has increased continuously up to the record year of 1925, demand during that year and in 1926 has been sufficiently well sustained to keep world prices of dairy products at relatively high levels.

In general it may be said that there is no immediate prospect of a weakening in foreign competition in agricultural production. Production in Europe is steadily recovering from the effects of the war, while expansion in Australia, Argentina, and Canada continues.

OUTLOOK REPORTS

A demand among farmers for more complete and up-to-date economic information led the Department of Agriculture in 1923 to begin preparing and issuing statements on the outlook for the production and marketing of the principal commodities. These reports met with such a favorable reception that the work has been expanded and made a regular part of the program of the department.

In February of each year a comprehensive report is prepared covering the outlook for all the commodities on which sufficient information is available. During the summer of each year special reports on the outlook for hogs, sheep, and cattle are prepared and a report on the outlook for wheat production is issued just prior to the time of planting winter wheat. The general report on the agricultural outlook for 1926, issued in February, contained statements on 31 different commodities, in additon to statements on the domestic and foreign demand situation, agricultural credit, and farm labor and equipment. This report covered a greater number of commodities than any of the reports that had been issued up to that time.

Necessarily, the outlook reports present a national point of view. They should be carefully considered by producers in every region to determine whether the general suggestions given apply to a greater or lesser extent to that region. In making his plans each farmer must bear in mind not only the probable conditions of the market and the prices he may expect for his product, but also the possible lines of production in which he may safely engage considering the conditions under which he is farming and the characteristics of his own farm. Both the requirements for production and the probable returns from the product should be considered in making decisions as to what to produce and how much to produce.

Blanket Recommendations Useless

Since conditions vary widely in different parts of the country, no blanket recommendation applicable to all the producers of a given commodity can be made in statements which present the national point of view. If the outlook for the production of some commodity is good, it does not necessarily follow that all the producers of that commodity would profit by increasing their production. Neither does it follow that it would pay all the producers of a particular commodity to curtail their production when the outlook is for a lower demand or increased supplies from foreign countries.

For this reason many of the State colleges, through their experiment stations and extension services have adopted the plan of preparing and issuing statements for farmers within their field. These statements are based in part on the department's report and in part on the possibilities of producing the different commodities within the State concerned.

Twelve of the State colleges sent representatives to Washington in February of this year to be present at the time the annual outlook statements were being prepared in the department. These State representatives thus became thoroughly acquainted with all the information which formed the basis for the outlook statements and were in position to prepare localized statements more directly applicable to the conditions within their States. It is hoped that all of the State colleges will be in position to send representatives to Washington to be present at the time of the preparation of the outlook reports for 1927 and subsequent years.

Reports Widely Distributed

The general reports of the department and the more localized reports of the State colleges are made available to producers by all known means of dissemination. Two hundred thousand copies of the report on the outlook for 1926 were mailed direct to farmer correspondents of the department within 10 days after completion of the report. Advance copies were sent to all of the farm papers in the country and condensed statements were furnished to the press and transmitted over the radio. The extension forces of the State colleges disseminate the information through their publications and through local meetings of farmers, at which the reports are presented and their application to the particular locality discussed. These reports have been of great value to cooperative marketing

associations. Many of these associations have been active in disseminating the reports among their members.

The general outlook report issued in February is followed by a report on farmers' intentions to plant spring crops. This information gives producers an opportunity to make adjustments in their plans should there be a tendency to overplant or underplant particular crops. A report on intentions to plant fall crops is issued in August. Frequent surveys of breeding intentions with regard to specific classes of livestock are giving producers more information upon which to base their plans.

Outlook Crop Forecasts Accurate

Considering the recent development of this work and the lack of complete information on many points that must be considered, the conclusions presented in the outlook statements have been remarkably accurate. In even the earliest reports nearly 90 per cent of the outlook statements on individual commodities turned out to be correct, and in the 1925 report and the 1926 report subsequent events proved that more than 95 per cent of the statements were correct.

It is the intention of the department to expand this work so as to cover a larger number of commodities, to concentrate on the collection of more economic information and further analysis of statistical data needed to furnish a better basis for subsequent reports, to obtain wide dissemination of the reports, and to assist the State colleges in every way possible in preparing and disseminating localized statements that apply especially to the farmers in different areas and regions.

AGRICULTURAL READJUSTMENTS

Because of continually shifting conditions with respect to the production of and demand for particular commodities, careful studies are made by the department as a basis for assisting farmers in interpreting the significance of these changes. During the last year numerous studies have been conducted in Louisiana, southern Mississippi, New Hampshire, Kansas, and Idaho with a view to providing local farmers with a more adequate basis upon which to plan their production and marketing programs. In all of these studies attention is given to the adjustment of farming to meet the needs of local markets in order that emphasis may be placed upon those lines of production which are more profitable than others. Markets outside the area studied are also considered, and the necessity of keeping production in line with market requirements as to quality and quantity is pointed out.

A study in Louisiana and southern Mississippi brought out the fact that the agriculture of the New Orleans trade territory is now in a transitory stage of development away from highly specialized cotton, sugar-cane, and rice plantations. This transition is of necessity slow but it is enabling small farms to be better able to withstand depressions. The survey also indicated that a profitable increase of cotton production would result from a greater use of the richer delta and bottom lands for the crop and the use of some of the worn-out hill lands of the State for reforestation and grazing purposes. It was shown that there is need for considerable improvement in cotton-

marketing methods. Market facilities for handling fruits and vegetables produced on farms in the region studied are inadequate, and this situation, together with insufficient market news, is responsible in part for the failure of local farmers to produce a larger portion of the food products consumed in New Orleans.

In a similar study for New Hampshire it was found that local producers could profitably expand the production of some commodities, such as potatoes, provided they were grown in acreages sufficiently large to make the use of efficient machinery and production methods possible. The possibility of producing more commodities for the use of the summer hotel and tourist trade was pointed out. In cooperation with local agencies, similar studies have been made in other States. A study of dairy farming in the Shenandoah Valley of Virginia emphasized the fact that the incomes of dairy farmers in that area can be materially increased by keeping cows with more dairy blood, by feeding better-balanced rations, and by modifying cropping systems so as to produce the roughages needed by dairy cows and increase the crop production per acre without additional expense. I need not emphasize the value of such studies in revealing neglected opportunities.

THE PEACH INDUSTRY

One of the most difficult problems in adjusting agricultural production is involved in planting tree fruits. In order to put before producers of the country the facts regarding bearing and nonbearing trees, commercial varieties, competitive districts, price trends, and costs of production, the department with the cooperation of State agencies recently made a survey of the commercial fresh-peach industry of the United States. This study included 26 different States, and reports as to the age and variety of peach trees in commercial orchards were received from about 21,700 growers located in all the important producing regions.

In 22 commercial peach-producing areas in 12 States the cost of developing peach orchards by the usual methods followed was determined. The costs of producing peaches and the usual methods and practices in producing peaches in most of the areas were also ascertained. The selection of proper varieties was found to be an essential factor in the development of a successful commercial peach orchard. Costly mistakes have frequently been made by growers in planting varieties which were not adapted to their market conditions. In some instances it has been found advisable to remove or top-work trees because the variety was proving unprofitable.

While many varieties of peaches are grown for marketing as fresh fruit, only a relatively small number of these were found to be of widespread commercial importance. The Elberta, by far the most important variety east of the Rocky Mountains, is grown in practically all commercial districts. Other varieties which are of commercial importance as fresh fruit are Carman, Hiley, and Belle. These mature earlier in the season than the Elberta. Parts of the information obtained in this study have been used by several States in preparing State publications on this subject. This study of the peach industry brings out conclusively the necessity for peach producers to make preparations for disposing of an increased production of peaches during the next few years.

MARKET NEWS

Use of market news economic information by extension workers continues to grow rapidly. More than a dozen States now have well-organized economic services, to which the department supplies a large volume of fundamental information. The demand from the news press, farm papers, farm organizations, and radio-broadcasting services has likewise increased.

The department's 7,500 miles of leased telegraph wires is the chief means of transmitting information between the various branch offices to Washington and from one branch office to another. This information includes shipment reports, arrival and price data, and statements regarding local conditions in producing sections and terminal markets, and other valuable facts. The information is compiled and given wide publicity from Washington and the branch offices and field stations by means of mimeographed reports, radio, telegraph, telephone, bulletin boards, and the press. The products covered by daily telegraphic reports include 34 of the most important fruit and vegetable crops of the United States.

On fruits and vegetables alone the total number of mimeographed market reports distributed during the year from Washington and the branch offices was approximately 12,150,000—an increase of 12 per cent over the preceding year. A constantly augmented demand for these reports as a basis for settling railroad claims testifies to their accuracy. The mimeographed reports also furnish a basis for statistical studies and research work. Many dealers and shippers maintain complete files of the reports for reference.

In providing market news on livestock 16 branch offices are maintained. At the close of the year preliminary arrangements had been made for opening 6 new offices, made possible by an increase in the appropriations at the last session of Congress. These offices will be located at Buffalo, Cleveland, Pittsburgh, Cincinnati, Indianapolis, and St. Joseph. They will enable the department to serve a large group which heretofore has been served only partially and indirectly.

Scope of Service Widened

Approximately 5,000,000 mimeographed reports dealing with market news on livestock were distributed during the year to subscribers in all parts of the United States and in a number of foreign countries. This represents a material increase over the distribution of such reports in the preceding year despite the fact that market reports are broadcast by radio and disseminated by other agencies. Everything is done to keep the mailing lists at a minimum. Daily wool-market reports are distributed to the press, and to cooperative associations and other interests which give the reports distribution through their own publications.

The grain and hay market news service has been made more effective by timely compilation of the market statistics necessary for the proper understanding and interpretation of the constantly changing conditions in the grain and hay markets. Contacts for the collection of market information have been extended so as to cover all of the important United States markets. Probably the most important of these reports received are those giving a summary of the

week's developments in the grain and hay markets. These are forwarded from all markets by telegraph on Friday and used in the preparation of the weekly grain and hay market reviews issued each Saturday morning. At the close of the fiscal year ending June 30, more than 300 newspapers with a total circulation of over 5,000,000 were publishing the reviews regularly.

PRESS SERVICE

New information on the science and economics of agriculture is continually being gathered by the department through research and study in field and laboratory. Such knowledge would be of little value to the public were it not made available for wide practical use. Early and wide dissemination of agricultural news is facilitated by the department's press service, in the Office of Information, which maintains "open house" to all press representatives, editors, and contributors to all kinds of publications using agricultural information. This results in reaching practically all of the 22,000 or more publications—daily newspapers, weekly and semiweekly newspapers, farm journals, trade and technical magazines, and miscellaneous publications—in the United States, and in ultimately reaching millions of readers. Serving the wants of the writers who call at the press service headquarters results in the featuring of much agricultural information in articles of length and comprehensiveness, many of them illustrated.

Information of strictly a news nature, relating to the agricultural situation, regulatory measures, or scientific developments, is made immediately available through the department's press service to some 200 press representatives in Washington, and also is mailed in mimeographed form to all interested publications. Stories of this kind for the year totaled more than 800. In addition, there were 110 restricted or exclusive releases, some of them prepared in response to special requests from editors and contributors to the press.

Supplementing the news releases is the printed weekly "Clip Sheet," which carries stories of timely information on agricultural practices, progress of research projects, and other news of department activities. This service is mailed to more than 12,000 publications serving a large circulation, most of which is rural. More than 250 special stories of like nature, with photographs, were prepared for syndicate services supplying a large number of papers.

College Editors Help

Particularly satisfactory results have come from the maintenance of close contact with the agricultural college editors who, through the use of much department material in their State releases, have spread information on the department's work.

Toward the end of the fiscal year a special information service was begun for country weeklies under the title, "Page, line, and paragraph." It consists of useful and seasonal information on agriculture and home making in articles varying in length from one line to a typewritten page. It goes each week to 7,000 weekly newspapers. That this service is well received and fills a long-felt need

is shown by the large number of commendatory letters received from editors and clippings from papers sent to the press service.

Agricultural news is regarded by the press as of increasing importance, and more and more space is being devoted to it. This is a healthy sign. The steady appetite for material on the department's work is indicated by the number of clippings taken from newspapers, farm journals, general magazines, and trade publications, only about 600 of which are sent to the press service. The number of clippings of all kinds runs usually from 2,500 to 3,000 a month, and has gone as high as 4,000.

RADIO

Early in 1926 the number of rural radio sets in the United States reached nearly 1,000,000. To furnish the users of these sets with timely agricultural information, the department has inaugurated a comprehensive radio program covering the full range of its activities. A new section in the Office of Information, known as the radio service, has been established to originate programs; to make contracts with commercial stations as an outlet for these programs; and to adapt timely subject matter for radio presentation. Ninety broadcasting stations, representing every section of the country, lend their facilities regularly to the department for an average of half an hour daily.

The department's farm programs are brief digests of the most timely, pertinent facts woven into story form, and covering a wide range of topics. The fall and winter broadcasting schedule of the radio service includes 20 special program features each week. The United States Radio Farm School, which has already brought requests for a half million enrollment cards, is conducted from 25 stations. Lessons take the form of experience talks and imaginary inspection tours. Radio "schoolmasters" at the different stations conduct the classes. All lesson material is dramatized so as to catch and hold the interest of the listeners. Printed lessons are mailed to all enrolled students.

Another outstanding service, released from 50 stations, is called "Noonday Flashes." This program enables a million farmers to listen in daily on a conversation between a county agent and a farmer who discuss current problems. "Aunt Sammy," a new radio friend and neighbor for the 5,000,000 farm women of the Nation who have an opportunity to tune in, is heard from 40 stations. The service known as the "Housekeepers' Chat" is a 15-minute period devoted five days a week exclusively to up-to-date information on subjects of interest to women.

New Farm Features

Special farm features scheduled for the 1926–27 season from 50 stations include "A Weekly Letter to Dad," which a son at college writes home telling about his studies in agriculture; "Autobiographies of Infamous Bugs and Rodents," a 10-minute specialty about "Pests that Are Bothering Now," as told by the insects and rodents themselves; "Chats by the Weather Man;" "Primer for Town Farmers;" "An Interview with the Agricultural Economist"; and a weekly "Farm News Digest."

Services through the various offices of the Bureau of Agricultural Economics to radio broadcasting stations have been maintained and expanded. The outstanding development of the radio market news service during the year is the extension of a leased wire to station KFKX at Hastings, Nebr. This powerful station will carry marketing information to the Great Plains States, into many sections not heretofore reached by the Government service. Congress provided for extensions of leased-wire service through the agricultural college at Ames, where reports are broadcast by the college station. A "drop" has been opened at Oklahoma City where, through cooperation with the State board of agriculture, reports are broadcast for the Southwest. With the development of more college and university radio stations additional contacts have been made for the use of market material. Marketing information is now being used by stations at Ohio State University, Columbus; Purdue University, Lafayette, Ind.; and the South Dakota station at Brookings.

WORLD CROP AND MARKET INFORMATION

An increasing demand for the latest information regarding crops in the world's chief producing countries and market conditions in our important foreign markets is evidenced by the many direct requests made of the department's foreign service. The rapidly increasing use of economic information by farmers and by cooperatives, merchants, and other agencies of the farmer in the process of producing and marketing the Nation's supply of farm products indicates a growing understanding of the close relation that exists between the agriculture of the United States and the production and market requirements of foreign countries.

Foreign competition and demand must be taken into account both in planning production and in marketing farm products. In recent years approximately 13 per cent of the net product of the agriculture of the United States has been marketed in foreign countries. Considering only that part of the production that is sold off the farm, over 16 per cent has been sent to foreign countries. Approximately 50 per cent of the cotton crop must find a market abroad annually, facing increasing competition from Brazil, India, China, and new cotton-growing regions in both South America and Africa. Last year nearly one-third of the wheat crop was sold in foreign markets. Producers of pork, tobacco, and apples, three other great industries, have to depend to a considerable extent upon foreign markets for an outlet. Prices received by farmers for all these products depend not only upon the production in the United States and foreign countries but also upon foreign market requirements as to quality and quantity, and the purchasing power of foreign consumers.

FOREIGN COMPETITION IN UNITED STATES

The producers of many farm products have to meet foreign competition in our own markets. The United States imported agricultural products, exclusive of forest products, valued at $1,918,000,000 in the year ending June 30, 1926. Many of these imports compete directly with American-grown products—for example:

Sugar $232,000,000, wool and mohair $125,000,000, hides and skins $94,000,000, tobacco $60,000,000, dairy products $31,000,000, and flaxseed and flaxseed oil $40,000,000. The farmers who have to market their products in competition with these imports are vitally concerned with production and prospects of production of these products in foreign countries as well as the foreign demand which is an important factor in determining at what price these products will be offered in the United States.

The department is developing a world crop and market reporting service that is furnishing producers with timely and helpful information. With the assistance of the International Institute of Agriculture, American consuls, Department of Commerce agents, and representatives of the Department of Agriculture in Berlin and London, and Italy, information is being collected as to production in all parts of the world and a beginning has been made in reporting market conditions in foreign countries. Reports of prices and market conditions in British and continental markets for our apples, wheat, cotton, tobacco, pork, and other products are received daily by cable and radio from foreign countries, and the information after careful interpretation is broadcast by leased wire, radio, and other channels of the department. Mailing lists arranged by commodities are maintained, to which a special release service is provided. "Foreign Crops and Markets" is being widely reprinted by trade journals, newspapers, farm papers, and farmers' cooperative marketing organs.

Another important step in bringing American producers and European consumers together has been taken in sending a well-trained fruit-marketing specialist to study European fruit markets for apples and citrus fruit. This survey of European fruit markets has brought to the attention of producers and shippers in this country many ways in which the European market requirements can be better met. Reports on these markets are helping to avoid much waste from shipping the fruit too green, not suitably packed for the ocean voyage, not put up in a manner to attract foreign buyers, varieties not suited to the market, sizes too large or too small, or in such great quantities as to overload weak markets.

Without additional personnel or increased expenditure, in the past year the department has increased greatly its foreign service. This has come about largely as a result of the natural development of the organization and through the more effective assistance of the cooperating agencies, the Consular Service, the Bureau of Foreign and Domestic Commerce, and the International Institute of Agriculture. The increasing and systematic use of data relating to foreign production and market possibilities is taking an important place in planning our farm adjustment and marketing program. The many special requests from producer interests for work in analyzing and developing foreign markets which are received in the department indicate the need for expansion of this service.

GRADING OF FRUITS AND VEGETABLES

Rapid progress has been made in the standardization of grades for fruits and vegetables during the last year. Grades have now been recommended for 35 different fruits and vegetables. The use

of national grades for fruits and vegetables has been extended through their adoption as official standards by the States. Thirty States have now officially adopted one or more of the United States grades. In many cases the use of these grades is compulsory for those crops standardized under the provision of the State law.

Great progress has been made during the four years that the shipping-point inspection service has been in operation in securing the adoption of recognized standards for fruits and vegetables. Supervising inspectors have reported better knowledge on the part of shippers of established standards and more effort to comply with the best grading practices. Insistence by several organizations on the shipment of graded products only has kept on the farms products of low quality which otherwise would have gone on the market in competition with the higher quality offered by the better growers and shippers. The inspection service has also helped cooperative associations in dealing fairly with their members.

Rice standardization investigations for the purpose of perfecting the United States grades for milled rice and for rough rice were continued. Improved standards for these commodities are being developed. A detailed study of California rice and of rice grading, handling, and marketing conditions is being made.

Rice-Grading Schools

In cooperation with extension leaders in the Southern States rice-grading schools have been conducted in the principal rice centers of Arkansas and Louisiana. At these schools rice-grading demonstrations were made, and moving-pictures and lantern-slide lectures pertaining to rice grading and to improved methods of handling rice were given. As a result, the Arkansas Cooperative Rice Growers' Association installed a complete rice-inspection laboratory and several rice mills installed new rice-testing equipment.

A mechanical device, known commercially as the Smith shelling device, for removing the hulls from samples of rough rice for testing and grading purposes has been perfected by the department. By use of this device it is now possible to determine the milling yields and qualities of rough rice, and also the percentage amounts of red rice and damaged and chalky kernels in rough rice. This makes uniform and accurate grading of rough rice possible. The device is in regular use for commercial inspection purposes by one of the principal rice-growers' cooperative associations.

Official standards for shelled corn, wheat, oats, rye, and grain sorghums were in effect during the entire fiscal year. Official standards for feed oats and mixed feed oats became effective September 1, 1925. In addition, official standards for barley were promulgated on May 26, 1926, to become effective August 24, 1926.

Requests have been received from many sources, including the governors of North Dakota, South Dakota, Montana, and Minnesota, for a complete Federal service in testing of wheat for protein content. Further legislative authority will be necessary, however, before these requests can be met.

No changes or modifications of existing standards or grades for American upland cotton were made during the fiscal year, but five standards for upland cotton of extra white color were promulgated

at the urgent request of producers and handlers in the irrigated sections of the Southwest whose cotton was not readily classified by existing standards. These standards become effective August 1, 1927, but prior to that date they may be used as tentative or permissive standards.

Seventeen States in which hay production or consumption is of importance had adopted United States hay standards as official State standards at the close of the year. Other important hay States are now giving serious consideration to the adoption of the standards. In 39 States agricultural colleges are employing United States hay standards in the teaching of hay grading and field crops to students of agriculture.

Standards for Soy Beans

New standards for soy beans under a joint Federal-State inspection service in North Carolina proved their practicability and value. Assistance was given to cooperative egg-marketing associations in Ohio and Nebraska in establishing grades for their market eggs. In each case the United States standards and grades for eggs were adopted. The results obtained indicate that the United States grades are practical and especially well adapted for use by cooperative organizations in handling and marketing graded eggs. The United States grades for eggs were demonstrated in Nevada, California, Oregon, Washington, Utah, Montana, Nebraska, Kansas, Missouri, Illinois, Indiana, Ohio, Michigan, and Alabama.

After extensive study, numerous conferences with the trade, and a thorough test in market reporting, grade descriptions for market classes and grades of slaughter, feeder, and stocker cattle were prepared for publication. Tentative grade standards for these classes were formulated and submitted in connection with the proposed standards for beef grades at public hearings held at Portland, Oreg., Chicago, and New York City. Progress was made also in drafting specifications for grades of calves and vealers and sheep and lambs.

In cooperation with several of the State agricultural experiment stations, a study was begun to determine, among other things, what makes quality in beef. Approximately 1,000 cattle fed by the experiment stations were graded as feeders, later as slaughter cattle, and afterwards as carcasses of beef. Finally cooking tests were made and the cooked meat graded by experts. In connection with these experiments standard grading charts were devised by which it is possible to apply a mathematical weighting to each grade factor, thereby facilitating scoring and making more accurate grade comparisons. The results so far indicate a rather close correlation between the grade of the live animal and the grade of the carcass.

After eight years' practical use in market reporting and three years' use as suggested standards in commercial transactions, standards for grades of carcass beef were formally promulgated June 3 as official United States standards, effective July 1, 1926. These standards provide for seven grades each of steer and heifer beef and six grades each of cow, stag, and bull beef. Interest in standardization is very active among livestock producers.

Tobacco Classifications

A classification by types of all American-grown tobacco was made. This classification has met a distinct need not only of the producer but of the tobacco trade as well.

Twenty-nine distinct types of American tobacco are recognized. Grades have been prepared for all the leading types with the exception of Burley. Study was given to this type, however, and at an early date tentative grades for Burley tobacco will be issued. A special report has been prepared on the sizing of tobacco, which may finally result in the use of a common sizing system for American-grown tobacco, not only in the United States but also in foreign countries.

Barley Standards

The preparation and establishment of standards for barley presented a difficult problem by reason of the difference in conditions obtaining in the Middle West as compared with the Pacific coast area. Public hearings were held at several of the important barley markets at which producers, dealers, and all other branches of the industry were afforded opportunity to present their views. Following this, official standards were established, divided into classes on the basis of the section where grown. These standards became effective August 24, 1926, and it is believed that they will work out satisfactorily to all interested parties.

INSPECTION OF FRUITS AND VEGETABLES

The service covering the inspection of fruits and vegetables and the certification as to their quality and condition has made satisfactory progress both at shipping points and at the receiving markets. The total number of inspections of fruits and vegetables made at receiving points was 32,531 cars, an increase of 197 cars over the preceding year. The total number at shipping points was 165,529, an increase of 34,442 cars. In addition to the inspections made for commercial interests, 38,889,636 pounds of fruits and vegetables were inspected for the Navy Department; 2,608,363 pounds for the Marine Corps; and approximately 8,600,000 pounds for the laid-up fleet and for various steamship lines. Substantial savings are effected for the Federal Government through the inspection service.

There has been a material increase in the number of export inspections of boxed and barreled apples in New York City. Exporters are depending more and more upon the Federal certificate as an aid in closing their financial transactions at the time the fruit is delivered to the steamship companies. The greatest increase in number of shipping-point inspections made was in California, this being due largely to a great increase in the number of grape inspections, 36,069 cars having been inspected in 1925–26 compared to 18,783 in 1924–25.

An increased willingness has been shown in practically all sections to accept certificates on cars which failed to meet the grade requirements. Shippers are finding that they can sell cars which are slightly under grade at only a slight reduction if they support their state-

ments of the quality of such cars by Federal-State certificates. Reductions in price on slightly off-grade cars are usually much less if made at the shipping point than if made after the product has passed into the hands of the buyer.

Hay Service Extended

Prior to this year the hay-inspection service has been limited by the fact that Federal standards were available only for timothy, clover, and grass hay. On July 1, 1925, standards were recommended for alfalfa and alfalfa mixed hay, prairie hay, Johnson and Johnson mixed hay, and mixed hay. On September 1, 1925, these recommended standards, together with those for timothy, clover, and grass hay were made the official standards of the United States for the inspection and certification of such hays. The publication of these additional standards caused an immediate increase in the demand for Federal hay inspection, particularly in the Western and Southern States.

Inspectors employed exclusively by the department have continued to assist other Government agencies by inspecting hay for them. The Federal specifications board adopted the Federal standards for timothy, clover, and grass hay some time ago as master specifications for all Government purchases. In November, 1925, they adopted in a similar manner the standards for alfalfa hay, prairie hay, Johnson hay, and mixed hay. In January a conference was held at the hay standardization laboratory in Washington, which was attended by representatives of nearly all Government departments interested in the purchase of hay. The standards were explained at this meeting and the various departments were offered the benefit of the inspection service. Considerable changes in methods of purchase were made in several of the departments as a result of this conference. This will result in financial saving to the Government and improvement in the quality of hay received on contracts.

MOVEMENTS OF POPULATION

The movement of farm people away from farms and the reverse movement of city people to farms when thoroughly understood constitute an important index of the agricultural situation. A study of these movements of population during the last five or six years throws considerable light on the present trend of rural events.

Information obtained from many sources indicates that in 1920 there was a net gain in total farm population of approximately 500,000 over the preceding year, when according to the United States Census reports there were 31,614,269 persons living on farms. The prosperity of farming at that time apparently restrained the customary flow to cities of young people between the ages of 20 and 25. Moreover, the annual movement of prosperous retired farmers to town was offset by the arrival of city people drawn to farming.

The year 1921, however, was marked by striking drops in prices for farm products and saw the beginnings of an unusual movement of population to the cities. Although many persons who were tempted to leave farming stayed on farms, in the hope that soon the tide would turn and prosperity flow farmward, some were forced out

of agriculture. The result was that the net increase of farm population that year fell from 500,000 to 200,000.

In 1922 a department survey indicated that the net movement of persons to cities reached the 1,000,000 mark, which entailed a net loss in the farm population of 460,000 persons.

In 1923 the drift of population to cities continued in full force, probably reaching its height and causing a net decline in the farm population equal to or possibly somewhat exceeding that of 1922.

Another survey of the situation was made by the department in 1924. It showed that while forces tending to drive people to cities were still in operation (more than 2,000,000 persons moved to cities in 1924) other forces were sending back from cities to farms a larger number than formerly. This return movement in 1924 totaled 1,396,000 persons, and reduced the net loss to the farm population to 182,000.

The Cityward Movement

The movement of population from farms to cities, towns, and villages in 1925 is estimated to have totaled 2,035,000 persons. The reverse movement to farms is estimated to have been around 1,135,000 persons. There was consequently a net movement away from the farms of 901,000 persons. Births on farms during 1925 were estimated at 710,000 and deaths at 288,000, leaving a natural increase of 422,000, which reduced to 479,000 the loss due to the cityward movement of population.

The large movement back to farms in 1924 and in 1925 doubtless included some persons who had sold their farms in recent years, but were obliged to take them back on account of the failure of promised payments. It doubtless also included many farm owners who found after a year or so that they could not afford to live in the city on the rentals of their farms. In the return flow of population to the farms there were likewise many laborers and former farm tenants, who had failed to find their expectations fulfilled in the cities.

In normal times there is a constant interchange of population between the country and the town. As farmers retire to cities, so city people retire to farms; laborers move back and forth from farm to city and from city to farm; and a stream of youth of both sexes goes permanently from farms to cities. All agencies seeking to promote the general welfare, whether rural or urban, should work toegther to reduce to a minimum the inevitable dislocations due to this interchange of people. Yet, looking at it from another point of view a reasonable movement one to the other benefits society. It is the extent of such excess movement from farm to city which is desturbing.

PACKERS AND STOCKYARDS ADMINISTRATION

The Packers and Stockyards Administration is a separate unit of the department organized to carry out under the direction of the Secretary the purposes of the packers and stockyards act. The purposes of the act are in a general way to promote fair, impartial, open, and competitive conditions in the livestock and meat-marketing process of the country. The act provides that the rates and charges

made at the public markets shall be just, reasonable, and nondiscriminatory, and prohibits any market agency or dealer from engaging in any unfair, unjustly discriminatory, or deceptive practice at a public market. Provision is also made for the correction of any unfair, unjustly discriminatory, or deceptive practices by packers in the manufacture and distribution of packing-house products in commerce.

Seventy-eight stockyards have been posted by the Secretary as coming within the jurisdiction of the act. Approximately 5,600 market agencies and dealers and 850 packers are also subject to regulation. All market agencies and dealers operating at public stockyards are required to register and carry adequate bonds to cover their obligations. The stockyard companies and market agencies are required to file schedules of their rates and charges. If a schedule is filed that appears to be unreasonable or discriminatory, the policy of the administration is to secure an adjustment informally where possible. If this can not be accomplished, formal proceedings are held to determine the reasonableness and lawfulness of such rate or charge.

Many Actions Started

During the fiscal year 19 formal dockets have been initiated and action has been taken with respect to 11 other cases which were pending at the beginning of the year. Of these cases 7 involve the general schedule of stockyards rates and charges, 2 involve the general schedule of commission charges filed by all the market agencies operating at their respective markets, 13 involve trade practices, and 9 involve insolvency. During the year 5 of these cases were closed by being dismissed without prejudice, in 9 cases the registrant was suspended, and in 4 cases a "cease-and-desist" order was issued.

Special attention has been given to the bonding of the market agencies and dealers. New forms of bonds have been prepared covering the different classes of business of the registrants. A complete physical valuation has been made of all the properties of the Denver Union Stockyards Co. At a number of the yards improved scales have been installed. Attention has been given to the testing of the scale equipment, and weighing instructions have been issued and forwarded to the weighers at all markets.

By an act of Congress, approved May 5, 1926, the packers and stockyards act was amended to provide that in any State where the weighing of livestock at a stockyard is conducted by a duly authorized department or agency of the State, the Secretary may register it as a market agency for the weighing of livestock received at such stockyard. In accordance with the provisions of this amendment the Railroad and Warehouse Commission of the State of Minnesota has registered as a market agency and is furnishing the weighing service at the South St. Paul stockyards.

ALFALFA AND RED-CLOVER SEED TESTS

The wide differences in agricultural adaptability within the United States of alfalfa and red-clover seed produced in different foreign countries, to which reference was made in my report of the previous year, have received constantly increasing attention. It is clear that

the information regarding the country producing seed of these two crops is of unusual importance to the American planter. Trials with alfalfa, red clover, and seed from various countries are under way, in most instances in cooperation with State agricultural experiment stations, although many years' experiments will be required to determine accurately the adaptability of seed of different origin to different sections of the United States.

Determining the winter hardiness of alfalfa varieties or strains imported from different countries is necessarily slow. Up to the present time the results available have shown that alfalfa seed from Turkestan is of little value for the greater part of the United States, particularly in those humid sections where alfalfa is an important crop. Seed from South Africa produces plants that are not sufficiently hardy for the Northern States, and, in the majority of tests, plants grown from seed from Argentina have suffered seriously in the United States over the first and second winter.

In considering the adaptability of red clover to different regions of the United States, three general regions may be distinguished: First, the region in which severe winters prevail, with low temperatures and with little snow or with great fluctuations in temperature; second, the region in which anthracnose or similar clover diseases are not important factors and in which the winters are somewhat milder; and third, regions in which the winters are not severe and in which anthracnose or other clover diseases are of major importance. Clover from domestic seed, including that grown in Canada, is more resistant to severe winters than any foreign clover so far tested, and in regions of severe winters only American-grown clover seed should be used. Seed of disease-resistant types of domestic clover should be used, if possible, where anthracnose or similar diseases prevail.

Seed Act Amended

The widespread interest in these results on the part of farmers, seedsmen, and others more or less directly concerned resulted in an amendment, April 26, 1926, to the Federal seed act (formerly designated the seed importation act), which requires that all seed of alfalfa and red clover imported into the United States be colored, so that the purchaser may know whether he is buying seed of domestic or foreign production.

The general scope of this amendment and the regulations promulgated for its enforcement may be briefly sumarized as follows: Whenever the Secretary of Agriculture, after a public hearing, determines that seed of alfalfa or red clover from any foreign country or region is not adapted for general agricultural use in the United States, entry of such seed is prohibited unless at least 10 per cent of the seed be stained a red color. This 10 per cent red coloring is required for Italian red clover seed effective September 2, 1926, and for alfalfa seed produced in Turkestan and Africa effective September 25, 1926. Moreover, all alfalfa and red clover seed for which the country of production can not be shown is prohibited entry unless at least 10 per cent of the seed be stained red. Except as provided in the foregoing, entry of alfalfa or red-clover

seed into the United States is prohibited unless approximately 1 per cent of the seed is colored violet, if produced in Canada, or green if produced in any other country. The amendment also provides that any seed in interstate commerce that is willfully misbranded may be confiscated by the Secretary of Agriculture by a process of libel.

SOY BEANS

No single agency has done more to develop the soy-bean industry in the United States than has the Department of Agriculture. Introduced from the Orient many decades ago, the soy bean only recently attained a recognized place in the cropping system of American farmers. As late as 1917 less than 500,000 acres were devoted to the growing of soy beans for all purposes. In 1924 there was a total of 2,500,000 acres, of which about 1,000,000 acres were used for hay, 1,000,000 acres for pasture and ensilage, and 500,000 acres for seed. This increase in the acreage devoted to soy beans in the United States is largely due to the development of better-adapted varieties. Previous to 1898, there were not more than eight varieties of soy beans generally grown in the United States, and of these only two, the Ito San and Mammoth Yellow, are now grown to any extent. In 1924, the last year for which data are available, the total value of the seed of all varieties of soy beans grown in the United States was estimated at $23,917,500. Of this total $12,675,540 must be credited to new varieties introduced by the department. The total value of the soy-bean hay crop in 1924 was $18,360,000, and of this value the new varieties were responsible for a little more than half.

There is no way of estimating the value of the soy beans used for pasture, ensilage, and soil improvement, but it is probable that at least 25 per cent should be added to the above figures as the value represented by these uses of the crop. In estimating the contribution made by the new varieties, not all the States growing soy beans are represented. Data were obtainable only from the principal soy-bean States.

Older Varieties Supplanted

The extent to which new varieties have supplanted the older ones in certain States is apparent when the following facts concerning soy-bean hay and seed only are considered. The Biloxi makes up 43 per cent of the total production in Louisiana; Black Eyebrow, 25 per cent in West Virginia; Haberlandt, 32 per cent in Kentucky; Laredo, 25 per cent in Mississippi; Manchu, 45 per cent in Iowa; Midwest, 50 per cent in Indiana; Mandarin, 42 per cent in South Dakota; Morse, 28 per cent in Missouri; Virginia, 55 per cent in Virginia; Wisconsin Black, 40 per cent in Wisconsin; and the Wilson, 53 per cent in Pennsylvania and 52 per cent in Maryland. The results obtained from the search for new varieties appears to have justified the work and compensated for the expense many times over. Of the total production of soy-bean hay and seed, 53.7 per cent is represented by varieties introduced and developed by the department.

SUDAN GRASS

This valuable grass sorghum and annual hay plant was obtained in 1909 from northern Africa, through the efforts of C. V. Piper, then agrostologist in charge of the office of forage crops of the department. It was immediately successful, particularly in the southern Great Plains, and in 1918, nine years after its introduction into the United States, the value of the annual crop of Sudan grass was conservatively estimated at $10,000,000. Like the sorghums, it has proved able to survive periods of drought, and its fondness for hot weather during its growing period has resulted in its extensive use as a summer pasture, not only in the Great Plains but also in the Corn Belt. The acreage has practically doubled since 1918, and is becoming more or less unvarying around 1,000,000 acres sown annually. It is appreciated as an emergency hay crop and summer pasture grass in Iowa almost as much as in Texas, and the interest in it is increasing as far east as Ohio. Although the value of a pasture crop is exceedingly difficult to appraise, there is justification for the belief that the annual crop of Sudan grass in recent years is easily worth $16,000,000. It has supplanted millet to a considerable extent as a catch-crop, on account of its ordinarily higher yields and the greater palatability of the Sudan grass hay. Seed of it is now abundant and fairly cheap, and this grass promises to continue as one of our regular forage producers, returning each year in this one item many times the entire annual expense of forage investigations in the the department.

The introduction of Ladino clover was accomplished in Idaho about 1915, and since then about 40,000 pounds of Ladino clover seed have been produced and there have been established about 1,000 acres of the very best kind of dairy pasture. The total value of this new industry, although comparatively small, may be said to have added some $13,000 to $15,000 a year to the income of Idaho farmers.

ABACA IN TROPICAL AMERICA

The so-called "hard" fibers furnish the entire supply of raw material used by American manufacturers for making binder twine, and the greater part of the raw material used for all other kinds of cordage except that made from jute and cotton. In addition to large quantities of miscellaneous hard fiber cordage between two and three hundred million pounds of binder twine are consumed annually on the farms of this country. The American farmer is, therefore, our largest consumer of hard fibers.

The four fibers that furnish practically all of our supply of this raw material are henequent, sisal, abaca, and istle. The imports of these four fibers in 1925 amounted to 215,758 tons valued at $43,434,169. The henequent is obtained principally from Yucatan, the sisal from Netherlands India, the Colonies of East Africa, and the Bahama Islands, the abaca from the Philippine Islands, and the istle from the northern part of Mexico. None of the hard fibers are produced in commercial quantities within the continental United States.

Special attention has been given during the last year to the establishment of abaca production on a commercial scale in tropical

America. The entire world supply of abaca fiber, with the exception of a few hundred bales, is produced in the Philippine Islands. With a decreasing supply of labor, and increasing competition from coconuts and other crops, the Philippine production of abaca is barely holding its own and is not keeping pace with the world demand for this fiber. Two diseases of abaca, that have appeared in recent years, threaten to reduce still further the production of abaca. In view of these conditions, it is apparent that effort should be made to encourage the growing of abaca in tropical regions other than the Philippine Islands.

Difficult Shipping Problem

Abaca, when propagated from seed, does not come true to type, which necessitates propagation either from rhizomes or suckers. The shipment of plant material of this character from the Philippine Islands to the American Tropics has proved to be a difficult problem, and shipments of abaca plants made in 1923 and again in 1924 failed to survive the long journey. During the calendar year 1925, with the cooperation of the War Department, the Navy Department, and the United States Shipping Board, arrangements were made for the routing of a freight steamer direct from the abaca-producing province of Davao, in southern Mindanao, to the Canal Zone. Provision was also made for the storage and handling of growing plant material on this ship.

During the months of July and August, 1925, 1,438 selected abaca plants, representing six different varieties, were accordingly collected on five different plantations in Davao. This material, which included rhizomes, suckers, buds, and growing plants, was packed in a number of different ways, and was shipped from Davao August 21. The shipment was en route 44 days. On arrival the Canal Zone plants were reshipped to the northern part of the Republic of Panama, where arrangements had been made for planting them in an isolated plant quarantine section. About 50 plants were subsequently taken to the plant introduction gardens at Summit, in the Canal Zone.

Of the total shipment of 1,438 plants, 1,052 plants, or 73.2 per cent were alive when the shipment arrived at its destination. There was a relatively heavy loss after the plants were planted in the plant quarantine station. At the close of the year about 500 plants were growing and in good condition.

DEMAND FOR RUBBER INFORMATION

Rubber has become an essential to agricultural production and marketing of crops, as well as to urban industries. About three times as much rubber is used in the United States as in the rest of the world. The present development of our civilization could hardly be maintained without rubber. The precariousness of being so completely dependent upon the East Indies for an indispensable product is being recognized.

Interest in the possibilities of rubber production is intensified by the large areas of unused or partially used land in the United States, especially in the southern and southwestern regions, where it is hoped

that rubber production may prove feasible. If suitable plants were discovered, and methods of utilization devised, the well-known disparities in the cost of labor between the oriental regions and the United States might be overcome, as we now grow cotton, rice, sugar, and tobacco in competition with the oriental countries.

Large areas of land now of little value in tropical America may be utilized for the production of Hevea rubber if suitable methods can be devised. Experiments to determine such possibilities are being made in numerous localities in the Canal Zone and in neighboring districts of the Republic of Panama, as well as in Haiti and southern Florida. On account of different conditions in tropical America, the methods that are used on the large rubber plantations of the East Indies have not appeared practicable, but other methods may be developed which will make production possible without contract labor and also avoid the large initial outlay and overhead charges of the East Indian plantation system. Careful experiments are needed to show the range of conditions under which it is possible for the trees to grow and to produce rubber, and to demonstrate a practical method for bringing the trees through the early stages of the development with the smallest requirement of labor and expense. The first result of these experiments is to show that the range of adaptation of Hevea, the Para rubber tree, is much wider than has been supposed.

Hevea in Tropical America

Experiments with Hevea and other rubber-producing plants are going forward in Haiti, in the Canal Zone, and in the Republic of Panama. Seeds and young plants of Hevea from Haiti were taken to Panama, and are being tested in numerous localities. The tapping of mature Hevea trees in Haiti has been carried into the second year with yields distinctly larger than at the corresponding periods in the first season. Compared with records of individual trees in Ceylon and elsewhere in the East Indies, the range of variation is much the same, and also the average production per tree. Thus there is no question of the feasibility of commercial production of rubber in Haiti, if a suitable system can be established. A small shipment of the crude rubber was sold in New York at the full market price of East Indian rubber.

Seedlings of Hevea are tolerant of shade and specially adapted to forest undergrowth conditions, so that planting in the open is not necessary. Slower growth of the plants in the early stages does not interfere with a vigorous and normal development of the trees after they have become well established. The use of cover crops like the pigeon pea, or Congo bean, may be desirable for controlling weeds or grass, shading the soil, and gradually establishing the desirable condition of the forest leaf-litter covering; also the closer planting of the rubber trees may serve the same purpose. While the tapping size might be reached somewhat later in close-spaced plantings, the cost of establishing plantations might be less and the outlook for sustained production might be improved, since the bark surface would be greater. Also the removal of low-yielding trees could be accomplished with less difficulty or need of replacement.

Promising Rubber Plants

Several of the tropical rubber-producing species thrive in southern Florida and appear to be so well adapted to local conditions that extensive cultivation might be possible if satisfactory methods for extraction of the rubber could be devised. The Assam rubber tree (*Ficus elastica*) and the purple-flowered rubber shrub (*Cryptostegia grandiflora*) are widely distributed and grow very well in many localities in the southern half of Florida. *Cryptostegia madagascariensis* has also been introduced into Florida; this species has been studied in Mexico and Haiti and is known to produce rubber of fair quality. The collection of rubber plants now growing at the plant-introduction garden Chapman Field, near Miami, includes numerous species of Alstonia, Asclepias, Carissa, Carpodinus, Castilla, Cerbera, Cryptostegia, Euphorbia, Ficus, Funtumia, Hevea, Jatropha, Landolphia, Manihot, Mascarenhasia, Parthenium, Pedilanthus, Plumeria, Rhobdadenia, and Urceola.

Rubber plants that are natives of dry regions are being tested in California, in the coast districts as well as in the interior valleys. Several dry-country rubber plants are known in Mexico, while others are reported in South America, Africa, and Madagascar. Special attention is being given to one of the native species of milkweed (*Asclepias subulata*), which appears to be the most promising for waste lands and for producing the largest quantity of rubber-bearing material readily and cheaply.

FOREIGN PLANT INTRODUCTION

Methods for safeguarding the country against foreign crop pests in connection with plant-introduction work are being steadily improved. All plant material from foreign sources is brought to Washington, D. C., and subjected to rigid inspection and to treatments if required. Much of the material goes into quarantine and some is detained under special safeguards. Material that is released to go to one or more of the plant-introduction gardens is under surveillance all the time it is being grown and propagated. Just before distribution a final inspection is given. These protective measures are developed cooperatively by the Bureau of Plant Industry and the Federal Horticultural Board.

Several years ago one of the agricultural explorers of the department discovered a remarkable cherry growing in the Ecuadorian Andes. This fruit is closely related to our wild black cherry. It occurs all the way from Mexico southward. For a long time only seed could be obtained, but two years ago some budwood was introduced and successfully established under glass at the Bell (Md.) plant-introduction garden. Four small trees from this budwood came into bearing this year. The fruit is of good size and very fair quality. The Capulin cherry, as this fruit is called, is believed to be adapted to our Southern States; at least it will be given extended trial there. It is essentially a warm-country cherry. A cherry for the home gardens of the South and for local markets would be a valuable acquisition. The fruit of the Capulin as grown here is about three-fourts to 1 inch in diameter and of a pinkish-red color. It is borne in racemes, like our native black cherry.

Bamboos are attracting much interest in this country, especially since the recent publication of a small bulletin on their growth and uses in the United States. The timber bamboo is one of the most striking forms. About 8,000 plants of this species were distributed in the spring of 1926. Cooperators are being encouraged to put out and care for small groves of from a quarter acre to an acre. It is important to make certain of a future supply of plants. The plants must be propagated by division, as seed is not available. Besides the timber bamboo, which finds many uses on the farm and in commerce, numerous other species are being tested and propagated—mainly at the plant introduction garden of the Bureau of Plant Industry, near Savannah, Ga.

TUNG-OIL TREE INTRODUCTION

Commercial plantings of the tung-oil tree, a recent introduction of the department from China, have now reached a total of about 1,500 acres. The new industry is centering in north-central Florida, and is being fostered by interests connected with the paint and varnish industries, in which tung oil is an important factor. Most of the bearing trees are young, and consequently the seed crop small. All available seed is still being used for planting purposes. While there is at present an ample supply of tung oil from China for the needs of American manufacturers all that is received is more or less adulterated or otherwise inferior in quality and there is a need for a commercial supply of the pure oil. The imports during the calendar year 1925 amounted to 101,550,000 pounds, with a declared value of $11,385,000.

Interest in the Chinese elm (*Ulmus pumila*) has increased each season since its first introduction, and very favorable reports have been received from all sections of the country. Because of its rapid growth and its resistance to drought and alkali special interest has attached to its usefulness in the Great Plains region, where there is great need for a shade tree also suitable for use in windbreaks. No other tree has met so successfully the requirements of this region. The ever-increasing demand for it has resulted in its being offered by a number of nurserymen in that section, and there is little doubt but that hundreds of thousands of these trees will be planted as rapidly as they become available.

RIPENING OF DATES

From the elaborate pollination experiments on dates it has been determined that the type of pollen used will make possible either the very early ripening or mid-season ripening or late-season ripening of the particular variety of dates that are pollinated. Not only the time of ripening but the size and flavor of the mature date are determined to a very large extent by the kind of pollen that is used.

The extent to which this may apply to fruit crops other than the date is now under consideration. It is possible that the same principle may be applied to secure more or less control of the quality of other fruits. In so far as the production of dates is concerned, this discovery is of unusual importance because of the material extent of the control of fruiting habits of the different varieties of dates now being grown in the Southwest.

SUGAR BEETS

Distinct advances have been made in the investigations into the curly-top of sugar beets, which is perhaps the most serious disease with which beet growers have to contend in the western areas. A mild form of the disease first observed at Bakersfield, Calif., in 1924, was studied and found to be caused by virus that had previously passed through certain wild hosts, subject to the disease, before being transmitted to beets by the insect *Euttetix tenella*. This remarkable discovery of attenuation of the virus is believed to be the first instance ever recorded of such a phenomenon in a disease of plants.

Additional data on the control of the sugar-beet nematode by rotation of crops was obtained at Salt Lake City, Utah, and this method is now unhesitatingsly recommended as the only practicable one under present conditions in Utah, Idaho, Colorado, Wyoming, Montana, and California.

An investigation of the best conditions for storage of commercial beets was brought to a conclusion at Salt Lake City. It had been previously brought out that enormous losses of sugar occur in the piles at beet dumps and in factory bins on account of the physiological activities of the beets which go on, although at a diminished rate. The principal recommendation resulting from this investigation is to shade the surface of piles with a moisture-holding inexpensive covering; which should be sprayed with water during dry weather. It was proved that this lowers the temperature and cuts down ventilation, which reduces respiration and the resulting loss of sugar.

WHITE PINE BLISTER RUST

Blister rust was found in the Northwest in the fall of 1921, when it was discovered at Vancouver, British Columbia, and shortly afterwards at Mount Vernon, Wash. Subsequent investigations indicate that it was introduced from France in 1910 on a shipment of young white pines that were planted near Vancouver. Field conditions favored its rapid spread and it became thoroughly established on western white pine in the coastal region of British Columbia. Following the discovery of the disease in the West, the department in 1922 and 1923 undertook a cooperative survey to determine the limits of infection and the possibilities of natural or artificial barriers delaying the advance of the disease into uninfested regions.

The season of 1923 was notable principally for the spread of infection southward through the dry belt of central British Columbia and through the Lake region of eastern British Columbia. Infection on cultivated black currants was found to be generally scattered over the dry belt and extended as far south as the central part of Okanogan County, Wash. Infection in eastern British Columbia was found to have extended southward to Grand Forks, British Columbia; Danville, Ferry County, Wash.; and to Nelson, British Columbia. It was also found that numerous Ribes were each year infected in the Puget Sound region of western Washington. Their proximity to native white pines made it probable that these pines were becoming infected.

Idaho Pine Threatened

In general, at the end of the 1923 field season, the Idaho white pine belt was directly threatened with invasion from the Northwest, through the dry belt and from the north through Nelson, British Columbia, and near-by points. Also, the increase of infection in western Washington constituted an ever-increasing menace of infection in western Oregon.

In 1924, the department in cooperation with the affected States and local agencies began a control program projected over a period of 10 years which aimed at delaying the spread of the disease and at developing and applying practical control measures. During the two years the program has been under way, good progress has been made in carrying out such measures as were considered worth while and in developing suitable control practices.

During 1925 two important developments in the spread of the rust were noted. First, western white pines were found to be infected at Nelson, British Columbia. This pine infection resulted from Ribes infection found at that point in 1923 and is significant in that it constitutes a focus from which Ribes infecting spores can be disseminated over long distances, thus greatly increasing the risk of initial infection of Ribes in northern Idaho. Second, the disease was found in the coast region of northwestern Oregon at Pacific City, Wheeler, and Knappa. This spread undoubtedly denotes the presence of infected pines in the Puget Sound region of Washington some distance south of the Canadian border. It constitutes a direct thrust of the disease toward the sugar-pine regions of southwestern Oregon and California.

Blister-Rust Control in the East

Steady progress in blister-rust control in the East has been made since the beginning of the control program in 1922. The developmental work prior to 1921 resulted in 1,036,903 acres of land being cleared of 14,491,503 Ribes, of which 91,718 were cultivated bushes. At the same time, the average per acre cost of eradication was reduced from 72 to 18 cents. From the beginning of the control program in 1922, a total of 29,988,089 Ribes, of which 204,451 were cultivated bushes, have been eradicated from 3,217,140 acres of land at an average cost of 18 cents per acre. Since 1918 a total of 44,479,592 Ribes of which 296,169 were cultivated bushes, have been destroyed on 4,254,043 acres of land.

The majority of owners of cultivated Ribes destroyed their bushes without compensation. During 1925, 59,458 cultivated bushes were uprooted, yet the State had to pay for only 2.2 per cent or 1,300 plants. A total of $514.55 was paid in compensation for cultivated Ribes to 49 owners. During the four years the program has been under way the cooperating States, towns, and individuals have made available a total of $723,451.02 for cooperative control work.

The blister-rust situation in the Middle Atlantic and Lake States differs materially from that in New England and New York. The southward advance of the disease into northern New Jersey and northeastern Pennsylvania has been comparatively slow. The difference in the behavior of the disease in this region is probably due to the

influence of host associations, and perhaps other factors not definitely known at present. Wild Ribes are moderately abundant, but the pine host is so scattered that field conditions are unfavorable for the rapid spread of the disease. Cooperative scouting in New Jersey during 1925 resulted in the finding of infected cultivated black currants in Monmouth, Passaic, Warren, and Sussex Counties. Similar scouting in Pennsylvania showed the rust present in Wayne County at Callicoon, Rileyville, and Damascus, where it had occurred in former years, and at Laurella, a new location. In two instances the disease was on cultivated black currants, in the third on pines and black currants, and in the fourth on pines and wild gooseberries. The southward spread of the rust is being carefully watched, and steps will be taken, in cooperation with the States concerned, to secure the application of control measures to valuable pine stands as the need arises.

BARBERRY ERADICATION

The campaign for the eradication of the common barberry for the purpose of reducing stem-rust losses of small grains has been in progress eight years. This year's results show that a great many barberry bushes still exist in the barberry-eradication area. Some of these bushes are in areas not yet reached in survey and eradication, for barberries are numerous in the old established farming communities of the counties not yet covered in the first survey. Others are bushes overlooked in surveys, and these cause the greatest concern. The second-survey results show that a comparatively large number of plantings were missed on the first survey. These are scattered well over the entire area.

In spite of the extreme care used in the second survey, a check survey in a county picked for the purpose showed that a comparatively large number of barberries may be missed even on second survey unless every foot of the area is inspected. All areas of escaped bushes must be completely inspected, and care must be exercised to insure that the extreme limits of these areas are reached. Numerous seedlings may continue to develop each season in the vicinity of locations from which fruiting bushes were removed. The missed bushes and the continuously developing seedlings are hidden centers of stem-rust infection. Patience in searching for bushes and seedlings, the following up of all reports of the early and heavy development of stem rust in local areas, and the eradication of bushes found will aid materially in the control of stem rust.

In the eastern winter-wheat producing States of the eradication area, stem rust of wheat is controlled as soon as the barberries are eradicated from an area. It may be that stem rust developing early in southern climates under certain conditions is spread widely by winds to the spring-wheat producing States. However, in 1925 142,550 barberry bushes and 701,796 seedlings were found in the counties surveyed. In the second survey in Minnesota, 1,124 bushes were found on 134 properties in 10 counties. In North Dakota, 110 bushes were found on 15 properties in 5 counties. In South Dakota, 446 bushes were located on 66 properties in 10 counties, and in Iowa, 1,125 bushes on 145 properties in 8 counties. Similar results were obtained from the second survey in the other States. Granted that

much rust may develop from untraced sources, it is nevertheless true that wherever very severe local stem-rust epidemics have continued to recur year after year, a careful survey usually reveals one or more plantings of barberries. Records of hundreds of these epidemics are filed in the offices of State officials, and many cases of the reduction of rust by eradication of local barberries are testified to each year by farmers and field men.

Many Bushes Still Exist

Thousands of bushes and seedlings, no doubt, still exist in the 13 States of the eradication area. A preliminary survey of a few townships in border counties in Kansas and Missouri in 1924, and a further check for stem rust in the spring of 1925, show that many plantings of barberries exist there. Some of these when examined were spreading stem rust to grains and grasses, others apparently were not.

There are eradication laws or regulations under which barberry bushes may be eradicated not only in the 13 States of the eradication area, but also in Missouri, Oregon, Washington, West Virginia, and Tennessee. Interest in the eradication of barberries is manifested locally in Pennsylvania. In the part of Virginia where *Berberis canadensis*, a native barberry, spreads stem rust to local grain crops local eradication of this native barberry is in progress. North Carolina scientists are showing interest in the spread of stem rust from *B. canadensis* in that State.

SOIL SURVEYS

The hitherto unknown characteristics of many soils in the United States have been determined by the Bureau of Soils in the last fiscal year. Survey projects were either begun or completed in 29 States, covering a total of 28,508 square miles, an area equal to more than half of Iowa. This means that during the last fiscal year definite knowledge has been gained of an additional 18,245,120 acres of soils—the Nation's most important agricultural resource—regarding their present and potential productiveness, the type of agriculture for which they are best suited, methods of soil improvement, crop adaptation, and their proper management.

An intensive field study was made of the important soil types of north-central Indiana, with a view to determining the relation between the distinguishing soil characteristics and soil productiveness and management. This marks the beginning of an entirely new and important line of soil investigation. Soil mapping and classification are now pursued in harmony with the dynamic or genetic conception of soils—a conception which recognizes the development of distinguishing soil characteristics under the influence of climatic and biotic forces, and not according to the old idea of classification on the basis of the physiographic position of soils. The facts collected in the study of the Indiana soils show that when soils are classified according to these natural, distinguishing characteristics they correspond to the soils to which the farmers have given distinction in local descriptive names, in their estimates of average yields per acre, in their soil-management practices and in their estimates of relative land values.

Alkali Soils in Illinois

Soil studies, in cooperation with the University of Illinois, have brought to light a wide distribution of certain "alkali" soils in southern Illinois, hitherto not known to occur east of the Great Plains. These soils, from the surface downward, are similar to the so-called "Szik" soils of Hungary, the "Solonetz" soils of Russia, and to the "slick spots" which occur in regions of low rainfall in the United States. These peculiar soils, in their development, owe their distinguishing characteristics to the presence of certain salts which are common in the dry regions of the West, but which were not known to exist so far east as southern Illinois. Such a distribution of alkali soils affects to a marked degree the type of crops that can be grown in the affected area.

EXCLUSION OF PLANT PESTS

The protection of American agriculture from new insect pests and plant diseases is one of the more important activities of the department. It is known that our chief insect and disease hazards are of foreign origin, and that the importation of plants and plant products without inspection or safeguards of any kind has been the means of entry of practically all of these imported pests. Since 1912, under the enforcement of the plant quarantine act, the rapid stream of entry of such pests has been largely stopped. This desirable result is being obtained by the enforcement of some 22 foreign quarantines restricting, controlling, and safeguarding by inspection the entry of the plants and plant products known to be carriers of specific plant enemies. For the enforcement of these orders, the department is maintaining an inspection service at the principal ports of entry in the United States, the utility of which is daily attested by the interception of new and important pests.

Under the authority given in the plant quarantine act to control and prevent the spread of new plant enemies that have gained more or less local foothold in the United States, some 17 of these are now under domestic quarantines, among which may be mentioned the pink bollworm of cotton, the Japanese beetle, the European corn borer, the gipsy moth, and the white pine blister rust. These domestic quarantines also include those necessary to prevent the spread of pests to the continental United States from the Territories of Hawaii and Porto Rico. The most important of these quarantines is that intended to prevent the entrance of the Mediterranean fruit and melon fly into the mainland of the United States.

Control of Pink Bollworm

It may be here noted that the pink bollworm has not reappeared in the important cotton regions of central and eastern Texas and in Louisiana, where it was formerly widely established, indicating the continued success of the eradication and control measures. The effort to confine the gipsy moth to its known distribution, covering now much of the New England States, has been accomplished by the maintenance, for the last two years, of a defense belt extending along the Champlain-Hudson River section. It is generally recog-

nized that the spread of the gipsy moth into the mountainous regions of central and northern New York would make it very difficult, if not impossible, to prevent the rapid spread of this serious forest and orchard pest throughout the United States.

In the case of the Japanese beetle and the European corn borer, natural and local spread can not be prevented, but control measures enforced with respect to these pests have effectively prevented their long-distance spread. The Japanese beetle has spread during the year into two new States, namely, New York—in the immediate vicinity of New York City, in the Hudson Valley and on Long Island—and the southwestern corner of Connecticut. The white-pine blister rust has appeared in Oregon, evidently spreading from its known western locations in British Columbia and Washington. New quarantine control measures for this disease have been adopted and are now being enforced. It is hoped that these will give greater protection against further spread to important white-pine areas in the Western United States not yet invaded.

Eradication Sometimes Impossible

It is recognized that such pests and diseases are introduced and firmly established over considerable areas, their eradication is impossible and their spread, probably ultimately throughout their possible range in the United States, can not be prevented. The control efforts which the department is carrying on are intended to retard the spread of these pests and to reduce losses pending effective local control.

Authority granted in the appropriation act for the fiscal year 1927, to inspect domestic fruits and vegetables and other plants and plant products offered for export to meet the sanitary requirements of foreign countries, became effective July 1, 1926. Such inspection is now being given. This is a new service but is expected to be self-supporting under authority granted to make reasonable charges for inspection.

The decision of the Supreme Court of March 1, 1926, in the case of the Oregon-Washington Railroad & Navigation Co. versus the State of Washington, in effect, ruled that, with the Federal plant quarantine act in force, "State action is illegal and unwarranted," and invalidated upward of 200 State quarantines. This situation necessitated an amendment of the plant quarantine act to make it possible for any State to take necessary protective action with respect to any subject which has not been specifically taken up under Federal quarantines.

A joint resolution was therefore drafted, amending section 8 of the act to give such powers to the several States. This amendment received the sanction of Congress and was approved by the President April 13, 1926. The amendment also authorizes the Secretary of Agriculture to cooperate with any State, Territory, or district in the enforcement of any such quarantines and, further, gives authority for any State to exercise its police powers with respect to any articles shipped in violation of a Federal plant quarantine. The amendment of the act providing for Federal and State cooperation in quarantine activities should greatly harmonize and strengthen such activities in the future.

ANIMAL INDUSTRY

The year just completed has been one of excellent progress in bettering conditions for the production of domestic animals. Methods for the eradication and control of animal diseases have been highly fruitful of results. Efforts to improve the quality of livestock by better breeding have shown gains both in public interest and in actual betterment of stock. In regulatory work also there has been a growing spirit of cooperation from individuals, transportation companies, the meat trade, and livestock organizations. This work has to do largely with supervising the importation and interstate movement of animals, inspection of meat, and supervising the manufacture of biological products.

It is gratifying to report that the United States again is free from the dangerous foreign malady, foot-and-mouth disease, which gained entrance in 1924 and recurred in 1925. Fortunately the ravages of the disease were confined in both outbreaks to limited areas in two States—California and Texas. Following a period of very close supervision over the regions affected—and especially of the rough, mountain ranges in California where deer had become infected—the department withdrew its last quarantine restrictions June 10, 1926.

The appearance of foot-and-mouth disease in Mexico near the end of the fiscal year was occasion for renewed precautions and vigilance. The department is optimistic, however, regarding the ability of the United States to maintain its freedom from the plague and to eradicate any infection which may ever gain entrance. Public sentiment supports the aggressive measures used in combating the malady by quarantine, slaughter, and burial or burning of infected carcasses. Success in eradicating the outbreaks of 1924 and 1925, and of establishing complete freedom from the disease in 1926, has been due largely to excellent cooperation among livestock owners and county, State, and Federal officials.

BOVINE TUBERCULOSIS DECLINING

In the nation-wide effort to eradicate tuberculosis from livestock, results have been unusually gratifying. During the fiscal year 109 counties completed a series of tuberculin tests showing that infection had been present to the extent of not over one-half of 1 per cent. With the disposal of reactors and establishment of other safeguards the counties were recognized as virtually free from bovine tuberculosis. This number is greater than the total of all previous years and brings the total list of such counties to 198. The acceleration of progress in establishing county-wide areas free from tuberculous cattle supports the belief of department livestock officials that the task of eradicating bovine tuberculosis from the United States is feasible, though still of great magnitude and likely to require many more years.

During the progress of the present systematic campaign, which began late in 1917, the extent of bovine tuberculosis in the United States has declined from about 4 per cent to 2.8 per cent. These figures are estimates based on more than 25,000,000 cattle tested. A reduction in per cent means a large corresponding reduction—

when applied to all cattle in the country—of economic losses and of menace to the livestock industry. More than that, the decline of the disease in cattle means that the menace to the human race, and especially to small children, is gradually being removed. The experience of inspectors engaged in field work has revealed scores of cases in which there was an intimate relation between tuberculosis among livestock and of people on the same farm, or who used raw milk from tuberculous cattle. Public sentiment is strongly behind the campaign to eradicate tuberculosis while the degree of infection is still low—which fortunately is the condition in most localities. Prompt and aggressive measures will save many human lives, reduce losses of animals, and put the stock-raising industry on a safer, sounder basis.

Liberal appropriations for the work made this excellent progress possible. The testing is done only by trained and qualified men and under a system which insures economy of operation. The number of cattle tested during the year was 24 per cent greater than during the previous fiscal year, yet the demand for the work exceeded facilities for testing, and 4,000,000 cattle were on the waiting list for testing when the year closed. As further indication of public interest, a survey made during the year showed that over 1,200 cities and towns in the United States now have municipal ordinances requiring the tuberculin testing of cattle furnishing milk for consumption. The ordinances, the survey showed also, were being fairly well enforced except in about 1 per cent of the cases.

Meat-inspection records for the year show a gratifying decline in tuberculous infection among hogs. Of the domestic animals besides cattle and hogs, poultry also are susceptible to tuberculosis. A survey showed that fowl tuberculosis is serious in several areas, especially around the Great Lakes and westward. Suitable field measures, combined with distribution of explicit directions for reducing losses, are the means being taken to improve the situation.

HOG-CHOLERA LOSSES

With the present widespread knowledge concerning the preventive-serum treatment for hog cholera the swine industry can be protected from heavy or sudden losses caused by that disease. As in the previous fiscal year the toll of hog cholera during the fiscal year ended June 30, 1926, was unusually low. In fact, there has been no period of exceptional prevalence since 1913–14, which was before the discovery of the cause of hog cholera and the development of means to immunize hogs against it.

The experience of nearly two decades indicates that modern methods of prevention and improved farm sanitation can stop the periodic waves of hog cholera, which before 1914 caused sudden and staggering losses and were disheartening to swine growers throughout the country.

During the fall of 1926 a situation arose which demonstrated clearly the importance of keeping swine immunized against this highly contagious disease. Owing to the slight extent of cholera in recent years, a very large proportion of swine owners discontinued the practice of immunizing their herds. As a further result the commercial production of serum declined in proportion.

Both of these conditions—large numbers of susceptible animals and shortage of serum—were responsible for extensive outbreaks in several hog-growing States until serum production again met the requirements of the industry.

ERADICATING CATTLE TICKS

The work of eradicating cattle ticks from the areas in the South where ticks are still present continues to gain ground. Cooperative tick-eradication activities during the year resulted in the releasing of 18 counties and 9 parts of counties from Federal quarantine on account of tick fever. The areas released were: In Alabama, two counties and one part of county; in Arkansas, two counties and two parts of counties; in Florida, six counties and four parts of counties; in North Carolina, seven counties; and in Oklahoma, one county and two parts of counties. In the area previously released, 72 counties in which some tick infestation still existed were rendered entirely tick free. At the close of the fiscal year 723 of the 984 counties originally in the quarantined area were released. Of this number 601 counties were reported as entirely tick free.

During the fiscal year 1926 Texas, or tick, fever was, by act of Congress, placed in the list of contagious, infectious, or communicable diseases of livestock. The act of Congress creating the Bureau of Animal Industry in 1884 provided by a special provision "that the so-called splenetic or Texas fever shall not be considered a contagious, infectious, or communicable disease within the meaning * * * of this act."

To understand the apparent inconsistency of this special exemption it should be remembered that in 1884 little was known of this cattle malady, which became known as Texas fever because it often followed the introduction in northern pastures of cattle from Texas. It should be remembered also that the 1884 law antedated by about five years the bureau's discovery that the cattle tick was the carrier of this disease.

Following this discovery and particularly since systematic efforts at tick eradication have been undertaken, the repeal of this provision has been frequently recommended. But it was not favorably acted upon until the present year, when an act approved June 28, 1926, repealed the provision in section 6 of the 1884 law permitting the movement of tick-infested cattle for slaughter. The present law provides "that until May 1, 1928, cattle infested with or exposed to cattle-fever ticks may be shipped in interstate commerce for immediate slaughter after one dipping in accordance with such regulations as the Secretary of Agriculture may prescribe." After May 1, 1928, only tick-free cattle will be permitted in interstate commerce.

SWINE SANITATION

Besides the diseases mentioned, which are of major importance, there has been progress also in reducing the toll of certain others both by regulatory and educational methods. The system of swine sanitation, developed by the Bureau of Animal Industry a few years ago in Illinois, is now being widely and effectively used throughout the Central West. It has not only greatly reduced losses of pigs

from roundworms and associated ailments but has improved the vigor and growth of pigs raised according to the system.

Extensive experiments for the control of stomach worms of sheep completed during the year at Vienna, Va., point to the ineffectiveness of pasture rotation alone for preventing losses from this pest. Though of some benefit, the mere changing of pastures as frequently practiced is much less effective than dosing the sheep periodically with a dilute solution of copper sulphate.

During the year the department began extensive investigations of animal parasites at two field stations in the South—McNeill, Miss., and Moultrie, Ga.—there being special need for a better understanding of Southern parasite problems.

QUALITY IN LIVESTOCK

The importance of high quality in domestic livestock has been continually urged by the department. Well-bred animals are the basis of a profitable livestock industry and an ample supply of good-quality meat and products. A definite method used for the last six years for increasing the use of purebred sires now has approximately 17,000 followers enrolled to use purebred sires exclusively in their livestock-breeding operations.

During the year Union County, Ky., after five years of persistent effort, has succeeded in banishing all scrub and grade bulls and establishing itself as the first county in the United States to use purebred bulls exclusively, there being 145 within its boundaries at the close of the year. The stallions, jacks, and boars of the county were purebred also so far as known, but effort has been centered on the improvement of cattle, owing to the large production of beef there. The accomplishment is especially noteworthy since it marks the success, on a county-wide basis, of an activity heretofore limited to progressive individuals or associations made up of specially interested persons.

Forty-three other counties in various States are likewise making outstanding progress and bettering their livestock. In each of those counties 100 or more owners have agreed in writing to use purebred sires for all classes of animals raised. The greater earning power and better selling price of well-bred stock continue to be apparent.

Through arrangements with the management of Sni-a-Bar Farms near Kansas City, Mo., the department obtained and published some of the results of an extensive demonstration conducted for 10 years in the improvement of an ordinary herd of cows by the use of purebred bulls. The marketing data and other results furnish convincing evidence that good breeding is a dominant factor in the production of high-quality beeves and that good feeding and management will not return best results unless the element of good breeding is present also.

MEAT INVESTIGATIONS

In accordance with plans made during the previous year, important research is now in progress to determine factors which influence the quality and palatability of meat. The experimental work takes into consideration numerous factors, including age, sex, breeding, grade,

and feed. Nineteen States cooperated with the department in the first year's work. In technical studies of the kind undertaken the necessity for accurate measurements was apparent early in the work for determining and expressing quality in meat other than by personal judgment. The development of equipment included machines for measuring color accurately and for determining the tenderness or breaking strength of muscle fibers. Slaughter records in connection with meat research include not only studies of carcass weights, dressing per cent, and quality of meat, but also weight of organs both full and empty, length of intestines, and numerous other details.

Soft-Pork Problem

Earlier investigations to determine the causes of "soft pork" and the opportunities which may exist for correcting the conditions producing it were continued in cooperation with 13 State experiment stations. The condition appears most noticably when hogs are fed certain rations, such as those containing peanuts, soy beans, and other oily feeds. Formerly soft pork was regarded as a problem chiefly of the South and dependent in large degree on rations containing peanuts. Developments during the last year's experimental work now show clearly that other feeds, notably soy beans, are likewise important, and that soft pork is a problem to be reckoned with wherever hogs are produced. The experiments are resulting in systems of feeding by which any of the softening feeds may be used to some extent, without necessarily producing soft carcasses.

ANIMAL PROTEINS

The chemical and physiological studies of meat and meat-food products have furnished new knowledge concerning the nutritive value of proteins in animal tissues. The supplemental value of certain meat proteins to that of vegetables is especially of interest. The protein of beef, for instance, enhances to a remarkable degree the nutritive value of protein in wheat, bolted wheat flour, corn meal, oatmeal, and rice; that is, when consumed in combination with beef proteins cereal proteins are much more efficient for promoting growth than when the latter are fed alone. In the same way certain animal products, such as tripe, calves' sweetbreads, beef blood, and beef serum, which are of low biological value when fed alone, are greatly improved in value when fed with the proteins of beef muscle or beef liver.

Other biological studies have revealed the mode of action of disinfectants. This work, which is highly technical, shows which chemical members of various series of compounds have the chief power of destroying bacteria. Several products studied proved to be of exceptionally high bactericidal power. Research of this kind has its practical uses in the treatment and eradication of diseases and in increasing the effectiveness of disinfectants.

LIVESTOCK EXPERIMENTS

Three years of experimental work conducted in Texas and New Mexico have shown that calves can be fattened in a comparatively short time on the feeds produced in the Southwest. Experiments

in West Virginia, which apply also to surrounding territory, have shown that cattle to be marketed off grass in the fall can be wintered satisfactorily—so far as gains are concerned—on almost any combination of feeds produced in the Appalachian region. Silage, cottonseed meal, and straw proved to be a more desirable winter ration than hay and grain.

Studies of wool production under western range conditions showed that length of staple is one of the most important factors influencing the weight of wool per fleece. The breed used in these experiments was the Rambouillet, and owners of such sheep should find it profitable to breed for fleeces of longer staple.

A five-years' comparison to determine the advantages of early or late lambing under New England conditions strongly favored the latter. Net profits for ewes that lambed late (May and June) were more than twice as great as for ewes that produced lambs early (February and March). The principal reason for the advantage was the lower cost of feeds. Late lambs and their mothers did well on cheap pasture, whereas the early lambs and their mothers required expensive feed.

Poultry-Breeding Work

Poultry-breeding work conducted at the department experiment farm at Beltsville, Md., resulted in increased production and a larger proportion of hens which laid 200 eggs or more annually. In poultry-feeding tests the benefit of cod-liver oil in rations of chicks raised in confinement was apparent. Removal of the oil from the rations of such chicks resulted in greatly increased mortality and poorer growth.

An important undertaking of the year in poultry work besides the experimental activities was the formulation and development among States of a uniform plan of accreditation and certification of hatcheries and breeding flocks. The essential purpose of the undertaking is the establishment of inspection and supervision, thereby enabling purchasers of fowls, of baby chicks, and hatching eggs to obtain stock free of disease and of the quality represented. The department also instituted cooperation with the management of official egg-laying contests with respect to the adoption of uniform rules and regulations.

MEAT INSPECTION RENDERS WIDE SERVICE

Of the various regulatory services which the department conducts for the benefit of the American public, Federal meat inspection is one of the most important and extensive. During the year this service was maintained in 896 establishments in 251 cities and towns throughout the country. It covered the inspection of more than 68,000,000 food animals both before and at the time of slaughter. The supervision extended also to the preparation of a wide range of food products derived from such animals. The service as now conducted extends to about two-thirds of the food animals slaughtered in the United States, the remaining one-third being local or intrastate slaughter not subject to Federal supervision under the Federal meat-inspection law. During the year, Federal inspection of meats made possible the exportation of about 1⅓ billion pounds

of meat and meat products to foreign countries which require certificates of inspection. This Federal activity thus aids in furnishing an outlet for a surplus of meats grown on farms and ranches of the United States.

Small Proportion of Condemnations

The general condition of food animals coming under Federal inspection has been reasonably good, the proportion of entire animals or carcasses condemned being less than one-half of 1 per cent. Parts of carcasses failing to pass inspection were more numerous, amounting to about 1.6 per cent of the number of animals inspected.

Meat-inspection records for the year continue to draw attention to a distressing condition at meat-packing centers, namely, the large number of animals which Federal inspectors find dead or in a dying condition. The numbers of such animals for the year are: Swine, 37,103; cattle and calves, 10,367; sheep and goats, 8,763; making a total exceeding 56,000 head of stock. Besides representing a large loss of meat and food products, the unfortunate condition of the animals entails much suffering and reflects on a branch of commerce which has earned widespread recognition for its highly perfected organization and efficiency in other respects. The total of 56,000 dead or dying animals found at market centers is, of course, a very small proportion of the livestock receipts, but the figure appears to be needlessly large and capable of reduction by the combined efforts of all persons shipping and handling livestock.

Supervision of Biological Products

The inspection of biological products intended for sale in interstate commerce was attended by a noteworthy increase in the number of certificates which the department issued for their exportation. A total of 467 certificates—more than a third greater than last year—were issued to accompany shipments to 22 foreign countries. These products, which include serums, viruses, and toxins, are important in the prevention, diagnosis, and treatment of various livestock diseases. Federal inspection of their manufacture deals largely with supervision that insures purity and potency. The quality of biological products made under Federal inspection continues to be satisfactory and in conformity with the high standard established for them.

BAIT FOUND FOR PEACH MOTH

Steady and remarkable progress along many lines has been made by the Bureau of Entomology during the last year. An attractive bait for the peach moth has been found. It has also been found that in its overwintering stages in the soil this destructive insect can be destroyed by two thorough cultivations. Furthermore a thorough study of the life history of the insect in Georgia indicates that the peach moth will not be a serious peach pest there.

The problem of the plum curculio in the peach orchards of Georgia appears to have been solved, although only a few years ago much consternation was aroused by the ravages of this insect.

Because of the general adoption of control measures worked out by entomologists of the department in cooperation with State experiment stations, the Hessian fly has been held to a minimum since 1919, and one of the best wheat crops in years has been harvested this year. The control of the Hessian fly has saved millions of dollars to the wheat growers, both in quality of their product and in yield per acre.

The European corn borer has been held to territory not much greater than that which it inhabited last year. No severe damage has been suffered in the United States. Based upon our thorough investigations of the biology of this insect, agricultural engineers have been able to develop farm machinery which mechanically destroys the corn borer while at the same time it performs the necessary harvesting operations at little or no increased cost. The efforts of the department through the effective cooperation of State organizations in thus retarding the spread of this injurious insect have resulted in the saving of millions of dollars.

A demonstration carried out to determine the effectiveness of the department's recommendations against the rice weevil, in which a small island off the coast of Georgia was the field of operations, has shown that this insect can be controlled economically.

In southern California investigations have shown that, with the proper field control practices, bean-weevil injury can be almost completely eradicated. Heretofore the loss from this insect has been very great, mounting into the hundreds of thousands of dollars.

Contact Spray Developed

A satisfactory contact spray has been found which can be used successfully against the Japanese beetle. Better soil insecticides have also been developed for use against the larvae of this destructive insect, and the advantages of geraniol as an attractant for the beetles have been more apparent. It seems probable that the department in its active work in delaying the commercial spread of this pest will have gained the necessary time for the development of control measures before the enormous damage is done which this insect has threatened.

Many thousands of parasites of both the European corn borer and the Japanese beetle have been brought in good condition from Europe and the Orient, and from Europe department experts have also sent parasites of the alfalfa weevil, the European earwig, and the European elm-leaf beetle.

The Gipsy moth has been held within its old boundaries of spread and the large New Jersey colony of the insect is under thorough control and approaches extermination.

Poison dusting from airplanes has been effective against the cotton boll weevil and the cotton leaf worm and is now being tried out with considerable success against the alfalfa weevil.

An extraordinary outbreak of the cotton flea hopper occurred in the early summer of 1926 and great damage was threatened. Investigation showed that a fair degree of control may be reached by the proper use of sulphur on the cotton plants.

White ants or "termites" cause millions of dollars damage to the wood of buildings each year. Methods of control have been

formulated and specifications prepared for use in the creation of termite-proof buildings. These plans have been placed before municipal engineers for adoption in their building codes.

An important result of careful studies is the finding that the western pine beetle has a tendency to select the slower-growing trees. This shows a possibility of eliminating the susceptible trees through selective logging operations.

INVESTIGATIONS IN MILK PRODUCTION

Increasing the efficiency of dairy cows so that the same amount of milk and butterfat can be produced from fewer cows at less cost is the quickest way of increasing the net income of the American dairy farmer. The average yearly production of butterfat per cow in this country is about 180 pounds. This is much too low. With such an average it is apparent that many farmers are not realizing a profit from the dairy business. Investigations by the department point to the possibility of increasing this average perceptibly within the next few years by laying special stress on certain fundamentals in dairy-herd management.

It has been found that the inherent ability of cows to produce milk varies to a great extent. One cow of certain parentage may possess the ability to produce large quantities of milk and butterfat economically, whereas another from the same parents may be entirely lacking in this ability. Another problem is that of the proper feeding of dairy herds. Why does one cow utilize feed to better advantage than another? Why does one kind of feed produce better results than another? The problems of dairy cow nutrition which involve not only the protein, carbohydrates, and fats in the feed, but also the calcium, phosphorus, and other minerals, as well as vitamins, are far from being solved.

Investigations now underway in the Bureau of Dairy Industry deal directly with these problems. Results so far indicate that through the finding of dairy sires that are pure for the transmission of high milk and butterfat production, it will be possible to mate animals so as to be reasonably sure the offspring will be high producers. These pure sires are being located through the testing of large numbers of cows and their daughters. When all the daughters of one bull invariably produce more than the dams of those daughters, almost regardless of how low or how high the production of the dams may be, it seems highly probable that this sire may be pure for the transmission of high production. Such a bull would be regarded as a proved sire and should be kept in use as long as he is serviceable. Many such bulls have been found and in finding them many inferior bulls have likewise been located. There is as much advantage in destroying the latter as in making the fullest use of the former.

Great Dairy Improvement Possible

Great improvement in dairy herds can be accomplished through a more general use of purebred sires. Fewer than half of the dairy bulls now in use are purebred. By eliminating scrub bulls and replacing these with purebreds, a distinct advance can be made in

increasing dairy production. The department is now undertaking to extend the use of purebred dairy bulls through cooperative bull associations and through organized scrub bull eradication campaigns.

Improvement in dairy production is also possible through better feeding of dairy cows. This includes the balancing of the ration so as to furnish not only sufficient protein, carbohydrates, and fat, but also mineral matter and vitamins. It has long been known that heavy milking cows need an abundance of mineral matter in their diet. This may be supplied through the proper selection of feeds, and the use of a liberal amount of legumes. However, it makes a difference how these legumes are cured.

Investigations by the department show that when cows get brown stemmy alfalfa which has been exposed to the rain or to too many days of hot sun, they often can not assimilate more than 5 per cent of the lime contained in it. Accordingly, they must draw on their bones for a large part of the lime needed in their milk. This results in decreased milk production, and possibly difficulties in rearing their young.

On the other hand, when cows get green leafy alfalfa which has been cured without getting wet by the rain and without too much exposure to the sun, they are able to assimilate about 20 per cent of the lime contained in it. They do not need to draw on the lime contained in their bones in order to supply what is needed for the milk or for reproduction.

Another closely related problem concerns uncertain breeding and temporary sterility among dairy cows and heifers. To determine whether or not this condition was caused by a shortage of vitamins in the ration, shy breeding cows and heifers were fed fairly large quantities of sprouted oats and wheat germ, these two feeds having been reported to contain vitamin E in abundance. After receiving sprouted oats for periods ranging from 10 to 114 days, a number of such animals were pronounced pregnant.

Utilization of Dairy By-Products

It is imperative that more attention be given to the efficient utilization of the by-products of butter and cheese manufacture. Over 28,000,000,000 pounds of skim milk, buttermilk, and whey is produced in this country each year. Of this amount 22,000,000 pounds is skim milk from the manufacture of butter. In this great volume of by-products is nearly 900,000,000 pounds of protein and 1,400,000,000 pounds of milk sugar. All of this is in a form available for human food, but under the present conditions the greater part of it is fed to farm animals. Although by this means it is converted into human food in a different form there is a very material loss in the process. The 2,500,000,000 pounds of edible dry matter in the dairy by-products fed efficiently to hogs would be converted into only 400,000,000 pounds of edible dry matter in the form of pork, or if fed to chickens would produce only 110,000,000 pounds in the form of poultry.

The department is undertaking investigations which are planned to reduce this loss by converting skim milk, buttermilk, and whey into convenient form for combining with other foodstuffs. Special attention has been given to the properties of dry skim milk in bread making and to methods of utilizing the proteins of whey. A process

has been developed and established in commercial practice for converting skim milk into a stable product which can be used efficiently for poultry feeding. It is hoped, however, that eventually the uses of skim milk in human food may be developed so fully that only the small part essential to the proper development of young animals will be retained on the farms.

DUST-EXPLOSION PREVENTION

Progress was made in work to prevent dust explosion in industrial plants. Dust-explosion regulations have been developed in cooperation with the National Fire Protection Association for flour and feed mills, sugar-pulverizing systems, cocoa-pulverizing systems, pulverized fuel installations, terminal grain elevators, and starch factories. These regulations embody the precautionary measures developed for the prevention of dust explosions and fires in representative industrial plants. The regulations have been adopted by the National Fire Protection Association and also by the National Board of Fire Underwriters, and have become the standards for insurance and State officials.

The development of the use of inert gas for the prevention of dust explosions is an achievement which should prove of particular interest to manufacturers of dusty products who have a dust explosion hazard in their plants. Feed manufacturers will benefit particularly from the work of the past year because the first tests and demonstrations have been made with feed-grinding equipment. Although it has been known for years that inert gas could be used to extinguish or prevent fires, the actual application of the principle had not, so far as is known, been tried with feed-grinding equipment.

Inert-Gas Method in Use

Equipment to provide inert gas for preventing explosions during the grinding of sulphur and hard rubber is already in actual operation in a number of plants and the tests made in the department during the past year indicate that it will be possible to provide in practically all feed-grinding plants insurance against dust explosions by means of inert gas.

The presence of static electricity on belts and operating equipment is a great dust-explosion hazard. It is one of the most difficult hazards to control, and up to the present time no satisfactory mechanical method has been developed to prevent its formation. Electrically-grounded combs and brushes on belts merely dissipate the charge after it has been formed and increase the hazard if the ground wire were to become broken. For this reason no grounding method for static electricity can be regarded as an absolutely effective control measure. Encouraging results are being obtained in tests on a waterproof, dry surface, rubber-belt composition. Laboratory tests on a leather-belt dressing have been so successful that plans are now being made to try it out on an industrial scale.

DETECTING FROZEN ORANGES

Research work was conducted to determine the chemical changes that take place in oranges during freezing in order that methods

may be developed for detecting and separating out the frozen oranges. It is highly important both for the producer and the consumer that frozen fruit be eliminated before shipments are made to market. Unfortunately, frozen oranges can not be detected merely by inspection. If some certain method for sorting out all frozen oranges can be devised, it will be of immense benefit to the fruit-growing industry and also to the consumer. If separated out in time at point of production, the frozen oranges can be used in the manufacture of by-products.

DETERMINING MATURITY OF FRUITS

One pressing problem confronting the growers of fruits is to know at exactly what stage of maturity to pick the fruit in order that it may reach the market in the best possible condition. If the fruit is picked too early it never attains its finest flavor and the market for the fruit is impaired by the unsatisfactory flavor. On the other hand, if the fruit is not picked until too late it is very likely to start deteriorating before it reaches the consumers.

Losses from this cause are especially large when the fruit is shipped long distances. It is not practicable to determine by physical examination alone when the fruit has reached that degree of maturity which is best for picking. Some chemical test is necessary. The Bureau of Chemistry laboratory at Los Angeles has made a study of the chemical factors that are affected by degrees of maturity in various fruits in order to devise tests by which the growers can determine when the fruit should be picked.

In previous reports the results of work on tests to determine the maturity of cantaloupes and oranges have been outlined. These tests for maturity have been applied commercially to oranges for a number of years and to cantaloupes for two or three years. They have saved growers from great losses. During the year work has been completed on maturity standards for raisins and the results published. A tentative standard has been worked out for maturity in pomegranates and has been tested through one crop. Work to develop maturity tests for other fruits is under way.

CHEAPER EMULSIONS FOR CONTROLLING INSECTS

Lubricating oil emulsions and miscible oils are used principally for the control of San Jose scale, citrus white fly, and citrus scale insects. In recent years their use has increased greatly. The formula for making lubricating-oil emulsions, which is now most generally employed, requires heat or a large proportion of soap. In the preparation of the boiled emulsion the use of heat is both time-consuming and expensive, and in the case of the cold emulsion formula, calling for the increased proportion of soap, the cost of the product is greatly increased.

As the result of a comparative study of this problem by the Bureaus of Chemistry and Entomology, a modification of the method of making cold-mixed emulsions was developed which gives a product that is apparently as stable and as effective as the best boiled emulsions, and one that can readily be made by the orchardist. The proportion of soap is the same as, or less than, that used in the pres-

ent formula for boiled emulsions, so that the cost of the product is materially decreased. This emulsion may be made and shipped in paste form containing only 8 per cent of water. The packing and shipping charges will thus be much less than if the ordinary concentrated emulsion were shipped. Last spring one grower made and used several thousand gallons of this product against San Jose scale with satisfactory results.

A soap-cresol-oil emulsion was also developed which contains less cresol, the most expensive ingredient, than the usual miscible oil and is therefore less expensive. When diluted for spray use it has the small-drop size and stability in hard water characteristic of miscible oils, and spraying experiments indicate that it is equally as toxic to insects as the product made by the old formula.

NUTRITIVE VALUE OF WHEAT BRAN

Previous studies on the proteins of wheat bran conducted in the Bureau of Chemistry have shown that these proteins differ essentially from the corresponding proteins of the other parts of the wheat kernel. They contain much larger quantities of the so-called nutritionally essential amino acids than are contained in the endosperm proteins. Wheat bran contains more than twice as much of these important amino acids as are present in the same weight of white flour.

In the light of these results obtained from a chemical investigation of the proteins of wheat bran, feeding experiments with albino rats were undertaken to further study the nutritive value of the bran proteins, and also to ascertain to what extent these proteins are available for assimilation when animals are fed, not the isolated proteins, but the crude bran.

Although wheat bran has long been recognized by practical feeders of animals as having high nutritive value, nevertheless there has been almost no experimental work done to determine the nutritive value of the proteins of wheat bran in which the bran supplied all the protein in the diet. It is generally conceded that bran is fairly well digested by ruminants which have digestive tracts adapted for the accommodation of coarse, bulky material such as hay and fodder. As for its food value for animals other than ruminants, particularly as a food for man, many conflicting views are expressed, ranging from the statement that bran is wholly without food value to statements that it is an excellent food, and that it is digested by man as well as by domestic animals.

Bran Well Utilized

The feeding experiments, in which about 70 albino rats were used, have shown that the proteins of bran are well utilized by rats and that the ability to digest the proteins in crude bran is not limited to ruminants as is frequently asserted. Rats have lived for nearly two years, a period which corresponds to about two-thirds of the normal span of a rat's life, on a diet containing no protein other than that supplied by crude bran. During the period of early growth they grew at a rate better than normal, but after arriving at the early stages of maturity, development practically ceased.

In a similar diet in which the protein was furnished by white flour instead of bran the animals gained during the first 100 days only one-half to two-thirds as much as the rats on the bran diet. Those receiving the white flour grew slowly, yet their rate of growth was so uniformly maintained that at the end of 254 days most of them weighed even more than did the rats that had been receiving the bran diet for the same length of time.

It appears that wheat bran contains in abundance certain factors required for the growth and development of young animals, but does not satisfactorily meet the animal's nutritional requirements after it has reached maturity. Rats fed the bran diet have produced offspring, but they had little success in rearing them. Fecundity was low. The high efficiency of the bran ration for promoting early growth, and the less satisfactory results obtained with it in connection with subsequent growth and reproduction are a striking example of how the nutritional requirements of an animal vary with the changing stages of development coincident with advancing age. This also emphasizes the need of giving consideration to this phase of nutrition in connection with the practical feeding of domestic animals for animal production.

THE FEDERAL FOOD AND DRUGS ACT

Progress was made in promoting the purity and truthful labeling of food and drugs through the enforcement of the Federal food and drugs act. This year is the twentieth anniversary of the enactment of the law. The department looks upon this act as a corrective measure rather than a punitive one and, in enforcing it, endeavors to render assistance to the industries in improving their products. For instance, a survey made a few years ago revealed that canned blueberries from Maine contained excessive quantities of maggoty berries. Several shipments of these were seized in various parts of the United States. The canners and growers of blueberries thought it impossible to reduce materially the quantity of maggots in blueberries. The blueberry-canning industry was threatened with ruin, since maggots in canned food constitute a violation of the food and drugs act. Blueberries are the chief crop of one county in Maine, and the livelihood of many people was threatened.

Staff specialists were sent from the department to study the situation, in collaboration with officials of Maine. As a result of the study, an apparatus was devised by means of which it is possible to eliminate the maggoty blueberries. The first season after this device was invented, it was used by a few canners with marked success. The next season, a still larger number used it and put up a product that met the requirements of both Federal and State food laws. Practically all of the principal canners have now adopted means that insure a legal product. Federal and State food inspectors patrolled the canneries to assist in eliminating maggoty berries and to see that the canned product met the requirements of the law. The educational methods followed by the Federal and State food officials have been effective both in saving an industry from great losses and in enabling consumers to obtain an unobjectionable product.

Deterioration in Sardines

Inspection of the sardines packed in Maine in previous years revealed that a considerable portion of fish which had undergone a form of decomposition known as "belly blown" was included in the pack. Numerous shipments of decomposed sardines were seized and extensive educational work to demonstrate methods for putting up a good pack was carried on. A survey was made to ascertain if educational work done among the sardine packers during the last few years had been effective. Packing plants were visited five or six times. It was found that the educational and regulatory campaigns had accomplished commendable results. Notwithstanding rather comprehensive sampling, no goods of last season's pack were found of a character warranting action under the Federal food and drugs act.

When individual concerns persist in violating the law, or when violations involve deliberate fraud either through adulteration or misbranding, the full penalties of the law are invoked to correct the trouble. For several years a bad situation existed in the salmon-canning industry in that a few canners persisted in putting up decomposed fish. An extensive campaign was carried on to stop this practice. Several seizures were made and a number of hard-fought contests in the courts resulted ultimately in verdicts for the Government. This has demonstrated to those packers who are not disposed to put up a sound and wholesome pack that it is incumbent upon them to revise their methods of operation and market an article which will comply with the law. The department has had the whole-hearted support of the better element of the industry, which through pressure on offending members has assisted in the process of reform. Examination of a large number of shipments of canned salmon during the last season has shown that great improvement has been made in this industry, and that the great bulk of the canned salmon shipped in interstate commerce now meets the requirements of the law.

VITAMIN CONTENT OF OYSTERS

Notwithstanding the fact that oysters constitute the most valuable fishery product of the United States, nothing previously has been ascertained regarding their content of vitamins A, B, and D. Work was therefore undertaken to determine the value of oysters with reference to these diet factors. An additional interest is connected with this investigation inasmuch as a large part of the food of oysters consist of diatoms and minute organisms—marine forms of life to which have been traced the origin of the fat-soluble vitamins found so abundantly in certain fish liver oils, such as that of the cod.

Fresh, medium-sized oysters obtained in the open market were frozen and ground. Graduated dosages of the frozen material were tested for its vitamin content by means of feeding experiments with albino rats according to methods in general use for vitamin determinations. The results of these experiments show that oysters are rich in vitamins A and B. Quantities of fresh oyster equivalent to half

a gram, calculated on a dry basis, caused prompt resumption of growth when fed daily to rats that had declined in weight as a result of deficiency of vitamin B in their ration. Even smaller quantities were found to practically meet the requirements of rats for this vitamin. Similar quantities of oysters have been efficacious in curing an eye disease in rats caused by a deficiency of vitamin A.

MANUFACTURE OF SIRUP AND SUGAR

Work was continued on a procedure for producing unsulphured cane sirup of good quality from low-purity cane juice. Important progress was made. This work will permit heavy milling and greater extraction of juice in the manufacture of this type of cane sirup and will reduce the loss resulting from low juice extraction. When used in conjunction with sugar production it will be possible to use the higher-purity juice for sugar, the lower-purity juice representing higher extraction being used for making sirup. This will make for greater economy in the commercial utilization of sugar cane under domestic conditions.

As a part of this investigation, a method for producing a new product called "cane cream" has been devised and production of this product on a semi-factory scale will be undertaken during the season of 1926. Cane cream, which is also made from lower-purity juice, has a consistency similar to that of confectionery fondant, with a characteristic cane flavor. It can be made of widely varying consistency, and can be used in a variety of ways, such as in sandwiches, on griddle cakes, and in preparation of cake icing. The cost of manufacture is moderate, and the use of lower-purity juices for producing cane sirup and cane cream will make possible greater efficiency and economy in the manufacture of sugar from higher-purity juices when used in conjunction therewith. The fabrication of these products is part of a general plan for the production of specialties which is believed to be of great economic importance for the cane-sugar industry.

Considerable progress was made in an investigation of the fundamental conditions governing clarification of cane juice in the production of raw and plantation granulated sugar. Because of lack of full understanding at the present time of the various factors which control clarification of juice, the elimination of nonsugar substances from juice in sugar manufacture is conducted with a varying degree of efficiency, and the maximum clarification possible is far from being consistently attained. It is known that the exact combination of conditions required for maximum clarification of cane juice varies greatly, depending on such factors as variety of cane, soil, kind of fertilizer used, degree of maturity of cane, whether the cane has been burnt or not, and length of time the cane has been cut. Methods are being devised whereby the juice can be tested from time to time and suitable adjustment made in clarification conditions, so as to obtain uniformly the maximum efficiency possible with the clarification process used.

A method has been worked out whereby the clarification of acid digestion liquors in the manufacture of glucose and corn sugar may

be considerably improved. This is of much importance, in view of the fact that uneliminated colloidal substances interfere with the growth of corn-sugar crystals. If the crystals are too small, difficulty is experienced in separating them from the mother liquid by centrifuging. Greater elimination of colloidal substances is therefore desirable, corn sirup of greater clarity resulting. This improvement is of distinct benefit to the rapidly growing corn-sugar industry, which in 1925 produced almost 600,000,000 pounds of this sugar.

FEDERAL-AID ROAD CONSTRUCTION

Continuing the Federal-aid road work, which has now been in progress for 10 years, the department, cooperating with the several State highway departments, brought to completion during the last fiscal year road-building projects involving the improvement of 9,417 miles. This brings the total mileage improved with Federal aid during the 10-year period up to 55,903 miles.

At the close of the fiscal year construction was in progress on 10,962 miles, and projects involving 2,470 miles had been approved for construction. Thus the cooperating Federal and State authorities have so far undertaken or completed the improvement of 69,335 miles, all of which, with the exception of a few hundred miles completed prior to 1921, is included in the interstate system of 182,135 miles known as the Federal-aid highway system, designated in that year in accordance with the Federal highway act.

The Federal-aid highway system is a real interstate system, designated in the first instance by the several State highway departments and approved by the Federal authority. The manner of their designation by those whose knowledge of traffic conditions is most intimate justifies the presumption that the roads constituting this system are the most important through highways in the country. Nearly a third of this important system has already been improved to a degree commensurate with present traffic demands under the Federal-aid plan, and the work currently in progress will raise the proportion well beyond a third. As reports of the State highway departments indicate that at least an equal mileage has been improved by the States without Federal assistance, it is probable that nearly three-quarters of the system is already improved or in course of improvement.

Ten years ago when the Federal-aid road work was begun there were only five States in which there was an improved road across the State. To-day 25 States have continuously improved highways entirely across them in at least one direction and 16 of these have completed such trans-State arteries in two directions.

Status of Transcontinental Roads

A recent survey of the status of improvement of the Federal-aid highway system shows that there is now one transcontinental road which is 97 per cent improved. This is the road from Washington through St. Louis, Texarkana, and El Paso to San Diego. Of other roads crossing the continent one which runs from Atlantic City to Astoria is seven-eighths improved; another from Norfolk to Los

Angeles is 68 per cent improved; and one from Boston to Seattle is 73 per cent improved.

It is the primary purpose of the Federal-aid highway legislation to expedite the improvement of such interstate roads; and the rapid progress that has been made in the last 10 years toward that end is in large part the result of the Federal participation.

The projects completed during the fiscal year 1926 include 2,161.3 miles of roads graded and drained, 627.3 miles surfaced with sand-clay, 3,274.1 miles surfaced with gravel, 58.2 miles of waterbound macadam, 553.2 miles of bituminous macadam, 179.6 miles of bituminous concrete, 2,464.3 miles paved with Portland cement concrete, and 78 miles with brick. These with the bridges completed, aggregating 21.3 miles in length, make up the total of 9,417.3 miles completed during the year and added to the length of the corresponding types completed previously bring the total up to 55,902.8 miles, as shown in the following table:

Mileage of Federal-aid roads completed up to June 30, 1926, by types of construction

Type of construction	Miles completed to June 30, 1926	Type of construction	Miles completed to June 30, 1926
Graded and drained	9,653.6	Portland cement concrete	11,976.5
Sand-clay	4,926.2	Brick	752.0
Gravel	22,547.3	Bridges	121.5
Water-bound macadam	1,123.3		
Bituminous macadam	3,176.3	Total	55,902.8
Bituminous concrete	1,626.1		

Cost of Completed Roads

The total cost of the roads completed during the fiscal year was $206,139,220, of which the Federal Government paid $90,294,107. These sums were expended on the 9,417 miles of new construction and on 1,193 miles of roads previously improved to raise the type of the prior improvement in accordance with traffic demands. The total Federal disbursements to the States during the year amounted to $87,754,534. This was the amount paid for work on all projects during the year.

The total of Federal-aid funds apportioned to the States from July 11, 1916, to June 30, 1926, was $671,375,000 which is $3,686 for each of the 182,135 miles included in the Federal-aid highway system. That the apportionment per mile of the system to the States of the several geographic divisions is substantially in accordance with the relative need for highway improvement as expressed by the number of motor vehicles per mile of the system, and with the relative character of the Federal-aid roads that have been constructed as indicated by the percentage of high and intermediate type surfacing, is shown by the following table:

Relation of Federal-aid apportionments and motor vehicles per mile of Federal-aid system and percentage of high and intermediate type surfaces constructed in the several geographic divisions

Geographic division	Average apportionment per mile of Federal-aid system	Number of motor vehicles per mile of Federal-aid system	Percentage of high and intermediate type surfacing
Middle Atlantic	$7,165	343	98.3
New England	5,175	223	75.8
East North Central	4,240	187	71.9
Pacific	4,186	193	36.7
East South Central	3,810	61	28.2
South Atlantic	3,793	85	38.7
Mountain	3,705	32	10.2
West South Central	3,187	74	27.8
West North Central	2,475	62	14.3

FOREST-HIGHWAY CONSTRUCTION

Within and adjacent to the national forests there have been designated as forest highways 13,459 miles of important roads, of which 10,954 miles are in the 11 States of the Mountain and Pacific groups.

Approximately 8,041 miles of these highways which either coincide with or are possible extensions of the Federal-aid highway system are designated as class 1 or class 2 highways according as they lie entirely within the forests or extend to outside towns. The remaining highways, including about 5,418 miles, are largely of local service and are designated as class 3.

Particularly in the Western States the forest-highway construction has been an important adjunct of the Federal-aid road work. As the national forests lie in general along the mountain ranges, the improvement of highways across them is necessarily expensive because of their rugged topography, their inaccessibility, and the shortness of the working season. Yet these forest links constitute vital connections in the main transcontinental and interstate routes, especially where they occupy the principal mountain passes. By virtue of these conditions the liberal appropriations made by Congress for road construction in the national forests are of importance not only in the development and protection of the forest areas and their immediate locality but are of benefit to the entire country, in that they make possible the construction of essential interstate and transcontinental highway connections.

The mileage of forest roads brought to completion by the Bureau of Public Roads during the fiscal year was 622.5 miles, which added to that previously completed brings the total at the close of the year up to 3,045.6 miles. These figures are subdivided by States in the following table:

Mileage of forest highways completed by Bureau of Public Roads, by States

State	Completed during the fiscal year 1926	Completed up to the close of the fiscal year 1926	State	Completed during the fiscal year 1926	Completed up to the close of the fiscal year 1926
	Miles	*Miles*		*Miles*	*Miles*
Alaska	30.7	146.4	New Mexico	44.3	164.1
Arizona	89.2	216.6	North Carolina		16.4
Arkansas	2.3	56.8	Oregon	133 5	464.9
California	56.4	202.6	South Carolina		5.3
Colorado	32.1	211.4	South Dakota		34.8
Florida	6.2	64.2	Tennessee		12.2
Georgia		8.6	Utah	16.3	259.0
Idaho	44.4	383.6	Virginia		6.5
Minnesota	19.4	34.6	Washington	29.6	184.1
Montana	66.9	303.3	Wyoming	39.6	173.8
Nevada	9 4	94.2			
New Hampshire	2.2	2 2	Total	622.5	3,045.6

HIGHWAY RESEARCH

For the better discharge of its obligations in connection with the administration of the Federal-aid and forest-road work the department has conducted for a number of years a series of researches into the design and construction of highways, the economics of highway transportation and construction, and the materials of construction best suited to resist modern traffic. The department has taken the lead in this field of research and its efforts, supplemented by those of the State highway departments and engineering experiment stations, have laid the foundation for the rational and economical methods of highway administration, design, and construction that have been developed within the past five years.

ALKALI-RESISTANT CONCRETE PIPE DEVELOPED

After five years' research in cooperation with the University of Minnesota and the State department of drainage and waters, methods have been developed by the use of which concrete drain pipe can be made that can be satisfactorily used in alkali soils in which the content of sulphate of magnesium and sodium is less than 2,500 parts per million. With extreme care in manufacture, even more severe conditions can be satisfactorily overcome. This work of the department and its cooperators makes possible the use of concrete tile for farm drainage in large sections in which previously the use of concrete pipe has been impossible because of deterioration resulting from attack by alkali.

EXTENSION WORK

At the end of the fiscal year 4,965 persons were engaged in cooperative extension work, of whom 3,513 were located permanently in the counties. Of these, 2,221 were employed as county agricultural agents or assistant agents, 882 as home demonstration agents, 135 in boys' and girls' 4-H club work, and 275 in negro extension work. These county workers were assisted by 764 full-time and 218 part-time subject-matter specialists located at the State agricultural colleges. Supervisors, assistant supervisors, and administrative officers

numbered 470. Funds from all sources available for cooperative extension work during the fiscal year 1925–26 amounted to $19,853,-726, an increase of about $240,000 over the previous year. Of the total funds, 62.2 per cent was allotted for extension agents in the counties; 5.7 per cent at the State agricultural colleges for administration; 10.8 per cent for supervision of county extension forces; 19.5 per cent for the employment of subject-matter specialists to supplement the county workers; and 1.8 per cent for activities of the Federal Extension Service in general supervision, administration, and coordination.

Farmers and farm women conducted about 770,000 extension demonstrations, and farm boys and girls in 4–H clubs about 590,000, a combined increase of about 225,000 demonstrations over the previous year. Improved practices were adopted on farms and in farm homes in nearly 4,000,000 instances during the year as a result of extension influence. More than 200,000 farmers and farm women gave valuable aid to the paid extension staff as volunteer local leaders in the promotion of extension activities. Effective training for extension agents and volunteer local leaders was emphasized during the year. Increased attention was given to the development of a wholesome and attractive life in the open country.

The department continued to cooperate with the State extension services in studying the effectiveness of various phases of extension work in the field. The studies made in 1923–24 in typical areas of seven counties of four States indicated that extension effort had brought about the adoption of one or more improved practices on three farms out of every four and that, on the average, 3.4 improved practices were adopted on each farm reached. These studies were broadened during the year to include special surveys of junior extension work in Massachusetts, local leadership in New Jersey and South Dakota, negro extension work in Georgia and Arkansas, and alfalfa extension in Wisconsin.

Progress in Smut Control

Outstanding work was done during the year by extension plant pathologists in influencing farmers to adopt the copper carbonate treatment for the control of stinking smut of wheat. Twenty-five States reported successful results in the use of copper carbonate in preventing loss from this fungus. One State found the treatment so satisfactory that about 90 per cent of the total wheat acreage was sown with treated seed.

Under the Clarke-McNary reforestation act, $50,000 was available during the year for assisting farmers in the management of woodlands, the reforestation of waste lands, and the more satisfactory utilization of woodlot products. This fund has been allotted to the State extension services at the rate of $1,500 to each State providing at least an equal amount for the employment of an extension forester. At the end of the year 25 States were cooperating on this basis.

In home demonstration work the number of demonstrations conducted by farm women increased 36 per cent over the previous year. Clothing, foods, nutrition, home management, house furnishings, and home health and sanitation were leading lines claiming the time

and attention of extension workers with farm women and girls. In addition to productive and management activities, opportunities for recreation and self-development were sought and created by farm women through their extension organizations. This was evidenced by the numerous community and county recreational and social events which were held, such as contests, camps, and pageants.

BOYS' AND GIRLS' CLUBS

One of the important functions of the State agricultural colleges and the department is to keep farm boys and girls in touch with the best in rural life and develop leadership, community responsibility, and good citizenship. This is largely accomplished through 4-H clubs organized by the extension service. In 1925 there were 41,286 of these local clubs in which 565,046 farm boys and girls were enrolled. The largest enrollments were in work with poultry, corn, swine, cotton, home gardening, dairy cattle, clothing, food preparation, nutrition, beautification of home grounds, food preservation house furnishings, and home health and sanitation.

Large as this enrollment is, only one in twenty rural boys and girls between the ages of 10 and 18 is receiving the instruction, training and helpful guidance to which all are entitled. Many farm boys and girls are not attending school. To reach a larger proportion of the boys and girls in the country, a program for the systematic development and expansion of 4-H club work has been adopted. This program contemplates encouraging county agricultural and home demonstration agents to interest more boys and girls in 4-H club activities where this is possible without decreasing their work with adults, or to employ an assistant agent or club agent to give their full time to farm boys and girls.

Agricultural exhibits were presented during the year at 46 State and interstate fairs, and at about a dozen minor exhibitions. A large and comprehensive exhibit of the various activities of the department was prepared for presentation at the Sesquicentennial International Exposition in Philadelphia, a special appropriation having been made available for that purpose.

NEW MOTION PICTURES MADE

The department is making large and satisfactory use of motion pictures in presenting many phases of its work to the public. Approximately 25 new pictures have been made each year for the last few years, and the department now has films in circulation on more than 200 subjects. The Office of Motion Pictures has available 1,485 copies of the various department films, many of which are in constant use by its extension and research workers. Some of the most effective work in promoting campaigns for the eradication of plant and animal diseases, such as white-pine blister rust, bovine tuberculosis, and the southern cattle tick, has been done through the use of motion pictures. In the tick-eradication campaign two motor trucks equipped with projection apparatus have been constantly engaged in presenting the advantages of tick eradication in rural communities, in many of which motion pictures have not been previ-

ously shown. This work has been so effective in creating favorable sentiment that plans are now under way for the making of a new motion picture on tick eradication, those previously made having been so widely shown that new material is needed.

For the past few years demonstrators have been at work on several of the Federal reclamation projects, particularly for the purpose of encouraging livestock production. These men have been maintained entirely from Federal funds, but during the last year arrangements have been made with State extension officials for their cooperative employment, in most instances as members of the State extension service. This plan has served to coordinate their activities with those of other extension workers and has brought to the reclamation projects the additional services of specialists from the State colleges of agriculture. Funds released by the taking over of portions of salaries and expenses by State and county agencies have been utilized in the employment of extension agents on additional projects where this service has been much needed. The demonstrators in the past have been very helpful in promoting the development of dairying, poultry raising, the production of sheep and swine, the growing of forage and pasture crops, and the giving of advice on other agricultural problems. A notable example in the development of dairying is found on the Newlands project in Nevada.

THE PURNELL ACT

Striking testimony of confidence in the efficacy of organized agricultural research was afforded by the passage of the Purnell Act for the more complete endowment and maintenance of the State agricultural experiment stations, which went into effect July 1, 1925, and added $960,000 to the $1,440,000 previously received by the stations through the Hatch and Adams Acts, and will ultimately (in 1930) increase the Federal endowment of the stations to $4,320,000 annually.

During the first year of the operation of the Purnell Act over 600 new research projects dealing with problems of primary importance to agriculture and rural life were successfully undertaken by the stations with notable broadening and strengthening of their field work and improvement of the cooperative relations of the department and the stations.

The Purnell Act was the first Federal legislation to give explicit authority for work by the experiment stations in agricultural economics, rural sociology, and home economics. The stations had previously done a considerable amount of substantial research in these fields, but lack of means and trained personnel had prevented the development of such research to the extent that its importance merited.

Research in Economics

While not neglecting the fundamental questions of efficient production, the newer work recognizes more fully the importance of finding solutions for the economic and social problems of the farm and the farm home. Clear evidence of this is found in the fact that half of the new projects undertaken under the Purnell Act deal with

such problems. It is believed that the better-balanced program of research thus made possible will contribute to greater efficiency and profit in the operation of the farm and to the development of a more satisfactory rural home life. Altogether, the first year's experience under the new act has been very satisfactory.

The expectation that the operation of the Purnell Act would lead to a considerable expansion of the already large cooperative relations between the stations and the department, especially in the relatively new fields of agricultural economics, rural sociology, and home economics, has been fully justified. The department and the stations are now cooperating in approximately 500 formal projects and in a large number of less formal ways. This means more efficient, less wasteful, and more speedy methods of attacking, and finding practical solutions for, some of the larger problems affecting farming and the farm home.

NITROGEN FIXATION

During the last year contact with the nitrogen-fixation industry has been maintained by the Fixed Nitrogen Research Laboratory. The industry has been served through the usual channels of publication, and the laboratory has been conducting various investigations in order to furnish further fundamental data.

A number of technical men have left the department to enter the synthetic ammonia industry.

Progress in nitrogen fixation in the year 1925–26 has been encouraging. About half a dozen industrial plants are now in operation in various parts of the country and others are planned or under construction. The combined capacity of these plants is now nearly sufficient to furnish all of the ammonia needed in the country for the refrigerative and chemical industries. The point appears to have been reached where the decision must soon be made as to whether this industry will expand into the field of nitrogen fertilizer on a large scale. While this step encounters competition from by-product ammonia, agriculture seems likely to profit by this competition through price reductions.

A synthetic-ammonia plant, mentioned in the last annual report as having been installed to use the process developed at the Fixed Nitrogen Research Laboratory has now been in full operation for more than a year. The mechanical design as well as the catalyst and other features have proved satisfactory. While cost data have not been available, it is estimated that the cost of production has been low.

Making Ammonia Fertilizer

The laboratory has continued during the present year to investigate the important subject of urea synthesis. Now that it is known that ammonia can be synthesized at a favorable cost, the next most important step is to be able to convert it economically into one of the various forms suitable for fertilizer use. Urea is one of the most attractive of the possibilities, since carbonic acid, the only other chemical needed besides ammonia, can be very cheaply obtained. The problem consists in working out a continuous process that will be sufficiently economical. The investigation is still in the

stage where the different unit operations are being studied, and it is too early to predict what the result will be when the entire cycle is put into operation.

The engineering division of the laboratory has just completed the design of a laboratory compressor to operate at 1,000 atmospheres. The compressor will be used in studying catalytic processes at very high pressures.

FIRE-WEATHER FORECAST SERVICE

Weather is a factor of large importance in the preservation of forests. Fire is the greatest menace to forestry and losses each year from this cause are enormous. Information in advance of weather conditions tending to the inception and spread of forest fires or to the putting out of fires already in progress is of inestimable value to protective agencies of the forests by enabling them to increase lookouts, assemble fire-fighting forces, and take other measures to stop any fires that may start.

In recognition of the need for an intensive fire-weather forecasting service a special appropriation, a part of it becoming immediately available, was made by Congress during its last session for the organization of such a service in some of the large forested sections of the country. To that end a conference, participated in by officials of the Weather Bureau, the Forest Service, State forestry organizations, and representatives of privately owned forests, was held in April at Portland, Oreg., to devise plans for the work. This purpose was accomplished and fire-weather warning districts were established for California, Oregon, Washington, northern Idaho and Montana, and southern Idaho, with headquarters, respectively, at San Francisco, Portland, Seattle, Spokane, and Boise. A trained meteorologist and forecaster was assigned to each district and arrangements made for providing service before the advent of the summer fire-hazard season.

Additional meteorological substations were established in the forests from which weather reports were obtained daily for use in connection with the forecast work and a system was organized whereby the forecasts and warnings were expeditiously distributed by telephone, telegraph, and radio to the protection agencies in the forests. The value and efficiency of the forecasts were demonstrated in connection with the exceptionally numerous and serious forest fires which occurred in the Western States.

Plans also were made for establishing as soon after July 1 as possible similar fire-weather forecast projects for the forested areas of Minnesota, Michigan, and Wisconsin and for the Adirondacks and New England.

WEATHER MAPS BY RADIO

In the latter part of the fiscal year arrangements were made by the Weather Bureau to conduct experiments for the transmission of weather maps to ships at sea by means of radio. For many years bulletins containing weather observations from land and ship stations have been broadcast twice daily for the benefit of ships in addition to general weather information, forecasts, and warnings.

Many masters enter the data on special base charts provided them for the purpose and prepare weather maps which are of great value in navigating ships. The purpose of the experiments is to transmit maps which are far more complete and accurate than can be made by ship masters. The experiments are now in progress and the project gives promise of success.

FRUIT-FROST WORK

Because of heavy frost damage to citrus fruits in California during the winter of 1924–25, many fruit growers in that State who had not heretofore protected their orchards by heating installed heating equipment during the year, and demand on the frost specialists of the Weather Bureau for cooperation and advice was unusually heavy.

Eight specialists were assigned to duty during the frost-danger season in the citrus and deciduous fruit districts of the Western States, and there were urgent requests from fruit interests for additional service in these sections, as well as in other portions of the country. This service has become one of the most valuable conducted by the bureau.

It was not possible to meet the many requests made for extension of a specialized fruit-frost service. Accordingly, to assist fruit growers to the greatest extent possible a cooperative arrangement was made with the California State College of Agriculture whereby local representatives of that institution in a large number of counties served as meteorological observers in cooperation with the Weather Bureau district forecaster at San Francisco. Special frost warnings were thus made available to fruit growers in many parts of the State.

WEATHER-CROP WORK

An outstanding feature of last year's work was the establishment of more than 50 additional telegraphic weather-reporting stations in the western and northwestern portions of the Cotton Belt. In recent years the area of cotton production has expanded into new territory, which was not covered by daily weather reports in these sections. This expansion was made possible through a special appropriation by Congress for this purpose, and affords daily weather information not heretofore available from important cotton-growing sections.

Weekly weather and crop bulletins are issued by the bureau showing weather conditions prevailing in different sections of the country as affecting crop growth and farm operations. The need for similar information as to weather conditions in other agricultural countries of the world has long been felt, so that the American farmer could keep in intimate touch with progress of world crops. Efforts were made during the year to obtain brief weekly weather and crop summaries from all the principal agricultural countries, and cooperative arrangements have been made so far with Canada, England, Argentina, India, and Australia, whereby reports from these are now published regularly in the Weekly Weather and Crop Bulletin. It is hoped in the near future to extend this service to still other agricultural countries.

RIVER AND FLOOD SERVICE

However disastrous in other respects, the deficiency of precipitation during the year prevented severe floods, such as are often a source of serious loss. Such minor floods as did occur were forecast with promptness and accuracy. The most damaging of these from an agricultural point of view occurred in April in the rivers of Texas. The reported and entirely unavoidable losses to crops and livestock did not exceed $60,000, while the reported value of property saved through the flood warnings of the Weather Bureau was more than $200,000.

One outstanding new feature of the year was the inauguration of a system of distribution of river and weather reports, including flood warnings, by radio. This service is now in daily operation at a number of important river centers, especially Cincinnati, Ohio, where it is maintained in cooperation with the United States Engineer Corps. Through this service farmers are now able to obtain river and weather information at 10 a. m. each day, including Sundays and holidays, whereas formerly they were compelled to wait from 12 to 24 hours.

UPPER-AIR SERVICE

In connection with the increased interest and activity in aeronautical matters, the Weather Bureau furnished considerable assistance and advice. Among the more prominent contributions of this character were: (1) The preparation of a comprehensive program of meteorological service along airways, published as part of a report on "Civil aviation" by the American Engineering Council and the Department of Commerce; (2) assistance in drafting an "Aeronautic Safety Code" for use in regulating commercial aviation; and (3) the publication of "Aeronautical Meteorology," the first of a series of texts on all phases of aeronautics, known as the "Ronald Aeronautic Library."

Notable among the events of the year was the flight of Commander Byrd to the North Pole, a flight whose successful outcome was, as stated by Commander Byrd, in considerable measure due to the advice given by a Weather Bureau representative who accompanied the expedition and was stationed at Spitzbergen. Similar acknowledgement was received from Captain Amundsen for assistance in connection with his trans-polar flight in the *Norge*.

HOME ECONOMICS

Probably the greatest service rendered by the Bureau of Home Economics up to the present time has been the preparation of popular bulletins bringing to the housewife the practical application of scientific facts. The popularity of these bulletins is shown by their distribution. Last year more than 2,000,000 were distributed by the department and by Members of Congress. Most of these bulletins deal with the selection, care, and preparation of food.

Housewives can make a large contribution to the family income by wise selection of materials. That this fact is appreciated is indicated by a large demand for the department's bulletin, "Floors

and Floor Coverings" and also for a more recent one, "Selection of Cotton Fabrics." Bulletins on the selection of wool and silk are in preparation.

The department has for many years been interested in diet and nutrition. During the last year a summary has been prepared of all the dietary studies available up to the present time. Two conferences were called to discuss this problem, and the beginnings are being made now of a detailed dietary survey to furnish facts as to dietary habits. These facts are of importance in guiding the production and processing of food materials.

A circular entitled "Planning Your Family Expenditures" has been prepared, and a more detailed bulletin containing budgets for rural families with specific incomes is in course of preparation. This is based on material which has been collected in connection with the cost-of-living studies and actual household accounts. In cooperaton with the national meat-production committee, detailed experiments have been made on roasting meat. These show that a much lower temperature than has hitherto been employed yields a more satisfactory product on roasting. There is better preservation of flavor and less loss in weight during roasting when this method is employed.

THE GRAIN FUTURES ADMINISTRATION

The Grain Futures Administration during the last fiscal year continued its studies relative to the volume of trading in grain futures on the various contract markets. During the 12 months ended June 30, 1926, the total volume of trading in grain for future delivery on the 11 contract markets aggregated 24,604,867,000 bushels of which 21,308,227,000 bushels, or nearly 87 per cent, represented trading on the Chicago Board of Trade, the leading grain futures market of the world. Of the total trading in all grains in all markets, 18,344,839,000 bushels, or nearly 75 per cent, represented trading in wheat futures, of which Chicago contributed 15,869,030,000 bushels or nearly 87 per cent. During the year the total volume of trading in wheat futures was only 567,000,000 bushels less than the previous year, while the total volume of trading in all grains decreased by 6,812,000,000 bushels, or nearly 22 per cent.

Big Transactions Covered Up

An investigation in the early part of the year revealed a number of instances in which trading operations were distributed in such a manner as to keep below the limit required for the making of reports to the Grain Futures Administration, thus making it possible to cover up large transactions which at times were important market factors. To meet this situation it was necessary to amend the rules and regulations pertaining to the enforcement of the grain futures act so as to require persons making large commitments to report their holdings direct to the grain exchange supervisor.

In the belief that the wheat growers of the Pacific Northwest would benefit through a near-by futures market, the Merchants' Exchange Clearing House of Seattle, Wash., was designated as a contract market under authority contained in the grain futures act

on January 29, 1926. Trading in wheat for future delivery on the Seattle Exchange was started May 1. While it is yet too early to determine the benefits to be derived from this market, the trading during the first few months indicates that it will be of value to the wheat farmers and will likewise afford the country dealers and millers of the Northwest the hedging facilities so long needed.

Progress in Enforcement

During the past year progress was made in the enforcement of the grain futures act. Through cooperation with the exchanges designated as contract markets under the act, business-conduct committees were created by the important exchanges. These committees were given broad powers over the transactions in futures and so far have accomplished some excellent results in the keeping of prices more nearly in line with supply and demand. This was especially marked in the December and May wheat futures at Chicago when the business-conduct committee in cooperation with the Grain Futures Administration prevented the cornering of the wheat market.

A special investigation occasioned by extreme fluctuations which occurred in the price of wheat futures during the early part of 1925 was completed and the results thereof published as Senate Document No. 135. This investigation revealed a close correlation between the wide daily fluctuations and the transactions of a limited number of professional speculators who bought or sold May wheat to the extent of 2,000,000 bushels or more within a single trading day. Further investigation covering transactions in the 1926 May wheat future confirm the conclusions set forth in Senate Document No. 135 that these heavy trading operations may move prices far out of the normal line; and may temporarily destroy the hedging value of the futures market. Steps have already been taken to work out some plan, in so far as the authority contained in the grain futures act will permit, to eliminate from the market those hazards which are so unmistakably reflected whenever excessively large lines are held by a few individuals.

LIVESTOCK-DESTROYING PESTS

Cooperative campaigns for the control of predatory wild animals during the year have resulted in a saving of livestock and game valued at more than $5,000,000. Skins or scalps of 202 wolves, 35,619 coyotes, 3,204 bobcats and lynxes, 167 mountain lions, and 176 stock-killing bears were taken, and reports indicate that a much larger number was destroyed in the poisoning operations but not recovered. These campaigns were conducted in cooperation with State departments of agriculture, State livestock commissions, game commissions, agricultural extension services, and stockmen's associations. Cooperators contributed approximately $375,000 and the department $274,220 in support of this work. Operations for the suppression of rabies among wild animals also were successfully prosecuted as a part of the work of predatory-animal control, and were participated in by State and local health and sanitary officials.

A notable achievement during the year was the work of the predatory-animal organization of the department in California in

organizing and successfully carrying through a cooperative campaign for the suppression of foot-and-mouth diseases among deer in that State. Cooperating with the Biological Survey in the work were the Bureau of Animal Industry, the Forest Service, the State department of agriculture, and the California board of fish and game commissioners. The successful outcome of the cooperative undertaking has ended a serious menace to the livestock industry, and the experience gained in the campaign will be invaluable in case of future similar outbreaks.

Controlling Destructive Rodents

Special research work in the use of thallium compounds, crude calcium cyanide, and red squill for the control of destructive rodents has developed very important results. Cooperative poisoning operations to reduce agricultural losses from rodents covered more than 15,000,000 acres and made an estimated saving in crops and forage grasses of more than $6,800,000. The department contributed $166,680 and expert leadership, while cooperators provided $614,560 and a vast amount of voluntary labor in distributing the poisoned baits on Federal, State, and privately owned lands. Arrangements made for the purchase of supplies and poisons in wholesale quantities increased the effectiveness of the control measures and resulted in a marked reduction in costs to cooperators. This service is actively supported by farmers and stockmen because of its very evident and direct value to them. It is closely coordinated with the extension work of the department, with State agricultural extension services, State departments of agriculture, county commissioners, and agricultural, horticultural, and livestock organizations. When the work was first undertaken the annual loss caused by rodents in crops and forage over hundreds of millions of acres was estimated at approximately $300,000,000. The work of suppressing these pests has now advanced to the stage where the permanent improvement of conditions represents a saving of a substantial part of the former losses, in addition to benefits resulting from the operations for the year.

It has been found that in great areas on the national forests rodents are so destructive to young trees that without their control successful reforestation becomes almost, if not quite, impossible. For several years naturalists of the department have been studying these problems, and good progress has been made in the work during the present year. Studies of the life history of the porcupine, one of the most destructive of these animal pests, have been nearly completed, and the information gained is of direct practical value in the cooperative rodent-control operations.

Attempts to Increase Quail

Important progress was made in the investigation of the causes of depletion of both native and introduced quail in the Southeastern States. The studies are being made in cooperation with resident sportsmen to determine the best methods of keeping coverts permanently stocked with this desirable game species. Particular attention is given to the causes of failures to rear young birds, including diseases, requisite food supply, and the control of such natural

enemies as tend to keep the numbers of this economically important species reduced. During the year the department issued permits for importations of 37,134 quail from northeastern Mexico, mostly for liberation in Southern States. Three of the States importing the largest numbers—Kansas, Oklahoma, and Texas—furnished 20 years ago or more most of the stock for other regions, and during this year 1,000 quail were reintroduced at a point in Oklahoma from which some of the largest shipments were formerly made.

Surveys of Wild Life

In continuation of its special and general investigations of definite wild-life areas, the department has sent biologists to parts of Alaska and Mexico to observe conditions affecting the welfare of migratory birds. In Alaska, studies were made early in the year of the fauna in the eastern Aleutian Islands and adjacent parts of the Alaska Peninsula, the home of a variety of important species of mammals and the breeding place of many game and other birds. Later in the year an expedition was sent to northern Alaska to band migratory wild fowl on their breeding grounds, to ascertain definitely their lines of flight, through the later recovery of the bands in other parts of the continent, as an aid to the administration of the migratory-bird treaty act regulations.

A biologist sent to Mexico for the purpose studied conditions on the principal wintering grounds of migratory waterfowl to obtain information necessary for consideration in formulating a possible arrangement with Mexico for the protection of migratory birds, similar in intent to the treaty that protects birds migrating between the United States and Canada. It was ascertained that the wild fowl, especially ducks, that go south from the United States to spend the colder months in numerous lakes and marshes in Mexico, are in need of better protection, as their numbers are decreasing through slaughter for market. The sale of migratory game birds is prohibited in both the United States and Canada under the terms of the migratory-bird treaty with Great Britain.

Surplus Game on Reservations

An outstanding achievement in connection with the administration of game and bird reservations by the Bureau of Biological Survey during the year was the disposal of 389 surplus elk and their shipment by special train from the National Bison Range in Montana to an elk-breeding association in Massachusetts. The removal of most of the elk on this range had become imperative in order to conserve forage urgently needed for buffalo, mountain sheep, and other game, including a smaller number of elk, overgrazing having reached such a point as to threaten serious injury to the range and a permanent reduction in its carrying capacity. No precedent is known for the handling of live game animals on so large a scale, and these were only a part of the elk the department is under contract to furnish the purchaser, several hundred remaining to be delivered. The receipts from the sale of surplus stocks of game from the four fenced reservations administered by the Biological Survey netted the United States Treasury $26,530.74.

CONSERVING ALASKA'S GAME AND FUR

That the new Alaska game law, after the first year of its existence, has had the approval and support of the public is evidenced by the treatment of violators in Territorial courts. In 55 cases brought for prosecution, 43 defendants pleaded guilty, 10 were convicted, and 2 were acquitted, and the penalties imposed included both heavy fines and imprisonment. The new law is administered by a resident commission of five members, one from each of the four judicial divisions of the Territory and the fifth the chief resident representative of the Bureau of Biological Survey. Through representation on the Alaska Game Commission the bureau renders great assistance to the commission in planning and carrying out its program of wildlife conservation.

In the short period the law has been in operation excellent results have been accomplished in the conservation of game and fur animals, one of the most valuable resources of the Territory. Skins of land fur animals exported from Alaska during the year were valued at $2,500,000, an increase of $500,000 over shipments of the previous year. With proper enforcement of the new law, the stocks of wild life can be materially built up and game and fur production increased. As game is the only fresh meat to be had in large portions of Alaska, and as big-game hunters are each year visiting the Territory in greater numbers, every effort will be made to maintain the big game to the capacity of the ranges.

FUR FARMING

Fur farming is an important industry on suitable islands in southern Alaska, and is also well established in the United States and Canada. There are about 2,500 fur farmers in the United States and Alaska and about 1,500 in Canada, the majority of whom are raising silver and blue foxes. The total investment in the industry in the United States and Alaska is about $30,000,000 and in Canada about $11,000,000. Fur farming is also being undertaken in European countries and in Japan, where it is having a quiet but steady development.

The department maintains an experimental fur farm at Saratoga Springs, N. Y., where studies of the production of fur animals in captivity include economical methods of operation and the prevention and cure of parasitic and other diseases. Publications of the department on the propagation of fur animals are in continuous demand by persons who contemplate taking up the work and by those already engaged in it.

INSECTICIDE AND FUNGICIDE INVESTIGATIONS

An important investigation that has been brought to a conclusion during the last year has been an investigation of the effectiveness against the San Jose scale of dry substitutes for lime sulphur solution. This work has demonstrated that the commercial products on the market, recommended as substitutes for lime sulphur solution, viz, calcium sulphur ("dry lime sulphur"), sodium sulphur, and barium sulphur preparations, when used at strengths recommended

by the manufacturers, in fact in strengths much greater than ordinarily recommended, do not furnish a satisfactory control of the San Jose scale. These results, which have been published and widely circulated, will be of great value in all fruit-growing sections where the San Jose scale is prevalent, and will also enable the department to bring action against the manufacturers of these products under the provisions of the insecticide act, unless the faulty claims are corrected.

Two investigations that will be of great value to manufacturers, as well as to consumers of the products involved, are the determination of the rate of loss of nicotine from nicotine dusts after packing, and the rate of deterioration of bleaching powder during storage. Both of these products, as ordinarily packed for consumption, lose their strength more or less rapidly with lapse of time, and it is impossible for the consumer to determine before use whether or not the product will be effective for the purpose for which it is used. With the information now available, manufacturers will be able to so pack and label these articles that the consumer may buy and use them with more assurance that the results desired will be obtained.

Worthless Lice-Control Preparations

A few years ago there began to appear on the market products to be administered to chickens in the food or drinking water to control lice, mites, and other external parasites. The products were delivered to purchasers by mail for the most part, and customers were obtained by inserting advertisements in farm papers and daily and weekly newspapers. Information obtained by the department indicated that such a method of freeing chickens of insects was of very doubtful efficacy and prompt action was taken to obtain official samples of the various products for analysis and test in connection with the enforcement of the insecticide act. Most of the preparations were some form of sulphur.

An easy way to rid chickens of insect pests evidently had its appeal to thousands of people who desired some easy way to get rid of a troublesome job. Tests were completed and the products found to be ineffective. Seizure of shipments, prosecution of manufacturers, and publicity by sending broadcast over the country copies of Service and Regulatory Announcements No. 48 were the means adopted to curtail the distribution of these products and inform the public concerning them. No doubt the board's campaign against the products has been very materially aided by the editors of farm papers, which formerly carried the advertisements, now refusing to permit their papers to carry advertisements of a remedy that they are convinced is without merit.

DISINFECTANTS

The use of disinfectants is becoming more widespread in the home, on the farm, in industrial plants and institutions, and in all places of public assemblage. Considerable numbers of the disinfectants examined under the insecticide act have been found without, or practically without, virtue or merit as germ destroyers, although the labels, circulars, and newspaper advertisements created the impres-

sion that they were unexcelled. The regulation of these materials has been one of the most difficult problems connected with the enforcement of the insecticide act. The danger that lurks in the use of inefficient or partially efficient disinfectants is evident, especially where a contagious disease is to be dealt with. The sale of a material as a disinfectant which in practice does not disinfect, is something more than a fraud on the public; it is a menace to public health. The activity of the campaign made against disinfectants and the need for regulation is shown by the fact that 260 of the 1,050 notices of court judgments issued to date were based on samples of disinfectants. Without resort to prosecution, the correction of many labels was secured through correspondence with manufacturers. A great improvement has been brought about in the labeling of disinfectants in general. The campaign against adulterated and misbranded disinfectants of various kinds has been continued throughout the year, special attention having been given to disinfectants which are recommended at too great dilution to be effective.

CALCIUM ARSENATE FOR BOLL-WEEVIL CONTROL

The campaign inaugurated in 1919 and involving the inspection of the calcium arsenate shipped to the South for use in controlling the cotton boll-weevil, was continued during the year. It was found that the composition of this article was growing more constant and satisfactory from the viewpoint of control and lack of burning qualities. The tonnage of calcium arsenate sold on the market each year is undoubtedly far beyond the tonnage of any other single insecticide or fungicide. Less than 10 years ago only a few thousand pounds of calcium arsenate were on the market. During the year nearly 20,000,000 pounds of the product was produced, most of which was used to protect cotton from the boll-weevil. The discovery a few years ago of the effectiveness of calcium arsenate against the cotton boll weevil was the signal for its production by many manufacturers who were inexperienced in making the product. Through the enforcement of the insecticide act the department was able to keep off the market many tons of this material which was improperly made. The application of this low-grade material would have resulted in direct damage to the cotton crop and indirectly would have been a deterring influence on the willingness of planters to follow the department's advice in the use of the material.

THE FOREST PROBLEM

One of the major economic problems of agriculture is the forest problem. Future rural prosperity and agricultural stability are closely linked with successful timber growing as a permanent form of land use. One-fourth of the land area of the United States is forest land and in the main will continue to be forest land. The cutting out of forests and the withdrawal of forest-supported industries make for local and regional economic retrogression. They decrease population, curtail the farmer's local market, deprive him of opportunities to work in the woods in off times, lessen taxable values, and increase his own taxes, and give him fewer and poorer schools, churches, roads, stores, neighbors. Contrariwise, fully sustained

yields from forest land through the intelligent practice of timber growing aid agriculture and both stabilize and promote rural prosperity. Social as well as economic welfare is involved.

Merely from the standpoint of farm crops forest products rank high. As a money crop, at the time of the last census forest products gave the farmer a return of nearly $220,000,000. This was a greater total than the farmers obtained from all sugar crops and was nearly half the value of the tobacco crop. Forest products consumed on the farm in such forms as fuel, fencing, and sawed and round construction material had a further value estimated at more than $175,000,000. Yet farm woodlands are seldom skillfully handled; they should yield much more. How to make full use of the growing power of his present forest land, and of other land on the farm really best adapted to forest use, is an urgent question for the individual farmer. Until he has the answer he is at a disadvantage. But as a problem of rural economics and rural social welfare the forest problem is of much broader scope.

Lean Acres Add to Surpluses

Agricultural instability is increased if land is cultivated on which farming does not pay. Under the urge of land hunger and the momentum of agricultural expansion across the continent, the plow has sometimes broken ground where the soil was too poor or rocky, the slopes too steep, or the climate too dry or cold to afford the tiller a fair living. The war, with its appeal to the farmer to increase production as a patriotic obligation, brought under crops still more land of relatively low productivity. Agricultural surpluses are swelled by the output of these lean acres.

Much has been heard of the "abandoned farm" in New England. There and in some other Eastern States the tide of cultivation began to ebb long ago. Between 1880 and 1920 the improved farm land in New England decreased more than 7,000,000 acres—a reduction of over 53 per cent. In the Middle Atlantic States it decreased nearly 6,700,000 acres. For the country as a whole, however, it increased each decade. Between 1910 and 1920 the increase was not quite 25,000,000 acres, or 5 per cent. What the plow surrendered in the East between 1880 and 1920 was more than made up by what it conquered elsewhere.

Yet the rate of increase, which was fairly uniform down to 1910, slackened greatly thereafter. With the approach to exhaustion of new lands to settle not only the quantity but also the quality of the acreage brought under cultivation fell off; and farm abandonment is no longer limited to the older parts of the country. By the process of trial and error the line is gradually being drawn between the lands which can and the lands which can not be successfully cultivated under present conditions. It is important to promote rather than delay the adjustment, as one of the means of promoting agricultural stability.

Grazing Homestead Act

The pressure for more land to homestead in the decade 1910–1920 was very strong. One of the consequences of this was the grazing homestead act. Under that act relatively little land was taken up on

which settlement has been maintained. The grazing homestead act is now generally recognized as a mistake. The same demand for opening land to settlement led to the listing for entry of a considerable total of acres within the national forests, which, it is now apparent, were erroneously classified as agricultural, since they either have not been taken up at all or have been abandoned after settlement or have become the means of establishing families where a fair living can not be made. We are beginning to see that a healthy and prosperous rural life must be based on sound use of land, that public policies which fly in the face of economic laws do not promote permanent welfare, and that to convert forest land and pasture land into submarginal agricultural land has broader consequences than those which fall on the individual farmer and his family, or even on the local community.

To the individual they mean an uphill struggle, poor living, and often a losing fight; to the community sooner or later a net loss; but to the country at large they mean an undue depression of the prices of the crops produced and a material waste of productive power. Abandonment of cultivation makes the backward swing of the pendulum. It constitutes a necessary though painful correction of past mistakes. It points also to the need of avoiding so far as possible future mistakes of the same kind. A sound national policy of forestry aimed to bring about timber growing on the land for which timber will be the best-paying crop is a means to this end.

The development of such a policy must be accomplished by the Federal Government and the States jointly. The fundamental task is to assist and hasten the adjustment of land use to the productive possibilities of the land itself and to public needs for what can be grown. Many of the old fields and pastures of New England whose cultivation ceased from a quarter to half a century ago have been reclothed by nature with at least a partial growth and not infrequently with a valuable growth of forest trees. In some instances the owners of the land had the discernment to hasten this process by forest planting or to apply other measures of timber culture.

Large Earnings of Timberland

To a remarkable degree the outcome has been favorable. Enough examples of the returns obtainable from timber growing in every part of the East are at hand to leave no doubt that it is the best form of use for a great deal of land formerly regarded as agricultural. The earning power of such land under timber is often astonishingly large, and going land prices are often materially below what that earning power would justify.

In short, there is no need to wait while economic forces work their slow and painful adjustment. Continuous right use of the land can get much more out of it than mistaken use which must subsequently be rectified by taking the back track. Nor is it necessary for the farmer, part of whose land will earn him most by producing timber, to wait while nature gradually restores a haphazard forest growth on abandoned fields. There is a much better remedy for misplaced agriculture, with its waste of human effort, than abandonment of use—the remedy of guidance and assistance to right use.

In regions where large areas of logged-off timberlands are awaiting development, or where tax-reverted lands are common, the land, tax, agricultural, and forest policies of the individual States should be so integrated that they will all work together to restore to forest use as quickly as possible the land that ought to be so used. In particular, State policies should aim to deter settlers from establishing on this land farms that in all probability are foredoomed to failure. Economic surveys and land classification such as Michigan has inaugurated are a means to this end. Colonization schemes which seek to dispose of land through high-power salesmanship, regardless of the consequences to those who buy, should be controlled. But the most important task is the work of research and education necessary in order that the farmer may know where and how to grow tree crops.

Forest-Minded Farmers

The most economic apportionment of our farms into the three classes of plow land, cleared pasture, and woodland requires that our rural population be not only agriculturally-minded but forest-minded. Timber culture must become interwoven into the traditions of farm practice. How to grow trees well is a question no easier to answer that how to grow potatoes or apples or sugar beets well. Crude and elementary methods of handling the forest will not produce first-class yields. Carefully organized research and demonstration must be carried on to develop an adequate scientific basis for good silviculture, and as fast as knowledge becomes available it must be passed along to the farmer. For the latter purpose, fortunately, many agencies are at hand which can and must be efficiently utilized—the agricultural colleges, high schools, the elementary rural schools, agricultural extension, the agricultural press, and other like means of affecting thought and practice. This twofold task of scientific research and rural education in forestry is in the main a public function, which the Federal Government and the States must share, as they are sharing in essentially the same task for the advancement of agriculture generally.

Amongst the obstacles to farm forestry one of large immediate importance is the lack of an adequate source of supply of forest planting stock. To reforest farm lands for which trees constitute the best crop and on which artificial reforestation should be undertaken an enormous quantity of cheap nursery-grown stock will be needed. Until private nurseries and methods of commercial nursery practice have been developed to meet this need the only way apparent to speed up the restoration to productiveness of the many millions of acres of waste farm land is through public production and supply of small trees. The Clarke-McNary law opened a way for the Federal Government and the States to join hands in building up forest nurseries, and already encouraging and significant results are in evidence. Thirty-three States have inaugurated cooperation with the Federal Government under the provisions of this section of the law; the nurseries now in existence have a present capacity of 52,000,000 trees and an output in 1927 of approximately 80,000,000 trees is expected; and the demand for stock is rising at a gratifying rate.

PROGRESS UNDER CLARKE-McNARY LAW

The Clarke-McNary law authorizes and directs the Secretary of Agriculture to recommend for each forest region of the United States adequate systems of forest-fire prevention and suppression. The law prescribed that this should be done in cooperation with appropriate officials of the various States or other suitable agencies. It also authorized and directed the Secretary to cooperate with the individual States in the protection of timbered and forest-producing lands from fire if he finds that the system and practices of forest-fire prevention and suppression provided by the State substantially promote the protection of forest and water resources and the continuous production of timber on lands chiefly suitable therefor.

This law clearly contemplates a program based neither on the theory that the remedy for whatever ills exist should be sought through the extension of Federal power into a new field or jurisdiction nor on the theory that the remedy must be left solely to the States to discover and work out, as falling in a sphere beyond the proper concern of the Federal Government. It recognizes that the problem is a national as well as a State problem, but it has in view neither Federal encroachment nor the affirmation of a "non possumus" in the name of "States' rights." Instead it aims at the assumption and accomplishment of a joint task, under a method of common counsels and agreement.

Excellent progress is being made under this law toward nation-wide forest-fire control effected through a combination of voluntary action by lumbermen and timberland owners, State legislation to abate fire hazards, State protective systems, and Federal participation in the maintenance of these systems and in the development of the general policy. An outstanding example of State legislation is furnished by Idaho in the form of a law requiring lumbermen to dispose of their slash and making it obligatory upon owners of timberlands to provide satisfactory protection both for standing timber and for cut-over lands. The whole question of the extent to which woods practices require modification in the interest of protection as an essential for continuous timber production is being studied regionally by the Forest Service and the State forestry departments in cooperation.

Better Cooperation in Prospect

This question is by no means simple. It will have to be carefully worked out, a step at a time, and with full opportunity for the cooperation of the lumber industry in analyzing the technical and practical problems involved and in devising the right remedies. This cooperation is on the whole in prospect to an unexpected degree, and with indication of a growing sense of responsibility to the public on the part of the industry, for the voluntary elimination of practices inconsistent with permanence of the forest resource to the extent that economic conditions make feasible.

The extension and improvement of organized protection of forest lands against fire under the stimulus of the Clarke-McNary law and somewhat enlarged Federal appropriations for this form of cooperation with the States has been notable. This is particularly con-

spicuous in the South. As the contribution of the Federal Government more nearly approaches the amount contemplated by the act, its influence and benefits will be proportionately increased. In the States which are doing most, the present financial share of the Federal Government in protecting the forest resources, basic for the supply of national needs, is exceedingly meager.

THE NATIONAL FORESTS

The conduct of the Federal enterprise in forest management is on the whole proceeding satisfactorily along sound lines. It has the approval of the public, is directed with vision and intelligence, and is characterized by a high degree of business competence. The cut of national forest timber is on the whole steadily rising, though with minor fluctuations due to variations in market demand corresponding with the ups and downs of general business activity; last year's cut surpassed that of any previous year both in volume and in money value, aggregating the equivalent of 1,192,000,000 board-feet, with receipts from timber totaling $3,368,685.

The timberland on the national forests productive of lumber and other high-grade forest products is around 85,000,000 acres; its eventual annual yield is the equivalent of probably 7,000,000,000 board-feet, log scale; and while its current yield is about 2 per cent of the country's total cut of these products, its estimated eventual yield is around 14 per cent. To obtain this, however, some 2,000,000 acres of burned-over forest land must be restored to productivity through planting unless the slow and uncertain process of natural reforestation is to be looked to—a process at best of many decades, during which the cost of administration and protection must run as an accumulating charge. This is neither economy nor foresight. The timber which the land might be growing will be urgently needed by the public long before it can be produced in any case.

Permanent Production is Object

As market requirements permit, national forest timber sales are converting areas occupied by mature stands from mere storehouses of wood into growing forests; and the first consideration in all plans for selling timber is not immediate revenue but maximum permanent production. The further this process of rejuvenation is carried, the greater the investment in the public enterprise of growing timber on these lands. Fire control is essential to keep this investment from being wiped out. It is also, along with forest planting where planting is necessary, the means of establishing young growth on all the land needing it—in other words, is in itself largely an investment and not purely an expenditure to safeguard the present merchantable timber and smaller trees. Future public timber requirements make it obligatory to build up the national forests as producing properties with the least possible delay. The program essential to accomplish this now lags. This holds true both with regard to the provision for forest planting and with regard to the provision for fire control.

The expenditures for forest nurseries and tree planting last year were, in round numbers, $170,000, out of a total for all purposes in

connection with national-forest administration of over $20,000,000 or exclusive of roads and trails of over $7,000,000. The area planted was 11,552 acres. The area in need of planting is approximately 2,000,000 acres. Through the acquisition of new lands by purchase and exchange and through the ravages of fire in bad seasons like last summer, when with the present provision for fire control considerable losses are certain, the area in need of planting is becoming not less but greater. Were there to be no increase in the present area needing artificial reforestation, about 165 years would be necessary at the present rate to complete the task. Obviously no such delay could be tolerated. The question is merely how long the exigencies of the general financial program of the Government will continue to preclude entering on the task in earnest. In view of its importance I believe that some enlargement of the work at the earliest possible date is imperative.

FOREST-FIRE PREVENTION

The summer of 1926 made clear that the time has come for a radical change in the method of making funds available for protecting the national forests against fire. The need is not for larger expenditures but for greater flexibility in the use of money. Altogether too large a part of the total now goes to fighting large fires which with better preparedness need never have spread over much ground or which need never have originated at all. It is emphatically a case of saving at the spigot and wasting at the bunghole. In the last 18 years fire fighting on the national forests has cost over $15,000,000. Of this about $9,500,000 was spent on fire fighting in five bad years. There is practically no limit to the expenditures which the Forest Service is expected to make if necessary in order to stop large fires. Thousands of men hastily recruited from the neighboring country, lumber camps, and other industrial enterprises interested in getting the fires out, and the sources of labor supply in the cities may then be thrown upon the fire lines; tools, bedding, subsistence, transportation, pumps, and equipment of any kind needed and quickly obtainable can be procured; and the fight can be waged week after week in the heart of the wilderness.

A plan that is therefore deemed eminently more desirable than the present one of bolting the barn door after the horse has been stolen is to provide adequate locks and safeguards in the beginning. In other words, we should prevent rather than have to put out at great expense the large destructive fires that have devastated such vast areas of valuable forests.

VIOLATIONS OF REGULATORY LAWS

The solicitor for the department reported to the Attorney General during the year 2,509 violations of the various regulatory laws which have been intrusted by Congress to the department for administration. Of these, 861 involved criminal prosecution and 1,648 involved civil actions. Fines, penalties, and recoveries, secured in litigated and nonlitigated cases amounted to $11,911.18; decrees of condemnation and forfeiture were entered in 912 seizure cases tried under the food and drugs and the insecticide acts; and 900 notices

of judgments were prepared for publication, pursuant to the requirement of these laws.

Applications for letters patent, 31 in number, on inventions of employees of the department were prepared and filed in the Patent Office. Twenty-seven applications were allowed and four were disallowed. The inventions patented covered a wide field in the patent art. Many of them were of unusual merit, and probably will be extensively used.

Titles to lands in excess of 200,000 acres were examined, resulting in the acquisition by the Government of 180,711 acres under the Weeks forestry law. Titles to considerable acreage were also examined for acquisition by the United States under the Upper Mississippi River wild life and fish refuge act. In the latter instance, the abstracts of title have been transmitted to the Attorney General for his consideration and approval.

THE LIBRARY

The library of the department now contains about 200,000 books, pamphlets, and bound periodicals, 14,969 of which were added during the last year. More than half of these and about two-thirds of the 3,356 periodicals currently received were obtained as gifts, or by exchange for department publications. They come from nearly every civilized country of the world and in nearly every language. A mimeographed series of "bibliographical contributions" issued from time to time by the library has proved useful. Numbers 10 and 11 of this series were issued during the year. Number 10 is entitled "Refrigeration and cold storage; a selected list of references covering the years 1915–1924 and the early part of 1925." Number 11 is a "List of manuscript bibliographies and indexes in the U. S. Department of Agriculture, including serial mimeographed lists of current literature." The library of the Bureau of Agricultural Economics issued during the year 10 additions to its mimeographed series of "Agricultural Economics Bibliographies." One of these is entitled "Alabama: An index to State official sources of agricultural statistics," and is the first of a series of indexes to State agricultural statistics which has been undertaken by the Bureau of Agricultural Economics library in cooperation with the State agricultural college libraries.

DEPARTMENT PUBLICATIONS

A total of 30,629,006 copies of the department's various publications were issued during the year. This includes 3,942,200 copies of periodicals and 26,696,806 copies of bulletins and circulars. About 60 per cent of the publications were new while the rest were reprinted to meet the demand for information contained in the older publications.

Greater printing costs made it necessary to restrict distribution of publications and to economize in printing wherever possible. The policy of sending out announcement cards calling attention to new titles was continued, with the result that thousands of bulletins were saved and made available for those to whom they would be

of most value. The same plan was extended to include articles reprinted from the Journal of Agricultural Research.

The newly established radio service aided materially in the distribution of agricultural information, carrying in condensed popular form much of that contained in bulletins and circulars. Thousands of those who listened to the radio talks wrote to the department requesting further information on the subjects discussed.

There has been an increasing demand for information in the nature of progress reports of the various investigations being carried on by the department. To meet this, preliminary reports have been issued in mimeographed or multigraphed form. Such reports serve a very useful purpose in that the information is made available before it is possible to issue a printed bulletin based upon the completed investigation and final recommendations.

PERSONNEL SITUATION

On June 30, 1926, the department had on its rolls 20,742 employees. This is an increase of 155 employees over the total force on the rolls June 30, 1925, but during the year we have effected a decrease of 103 employees in Washington, making a net increase of 258 in the field service of the department. The increase is due to the expansion of certain lines of work for which Congress provided increased appropriations and for the execution of new duties placed upon the department by legislation. The turnover in the personnel during the fiscal year 1926 was 11.41 per cent which was approximately the same as the percentage during the preceding year. Further adjustments made in accordance with the salary classification act have had a tendency to stabilize the personnel situation, and with the benefits under the new retirement act, still further improvement may be expected.

HOUSING SITUATION

Better housing conditions for the Department of Agriculture in Washington apparently are assured by the passage of the public buildings act approved May 25, 1926. From information available at this time the department is among the first of the executive branches for which new buildings are to be provided under this act. The central building connecting the east and west wings constructed some years ago presumably will be the first unit to be constructed for the department, conforming architecturally with the wings and in general with the original plan, modified so as to provide additional floor space. The construction of this building will result primarily in a great improvement in the appearance of the Mall and the building as a whole will be representative of the place of agriculture in the Nation. While, however, the construction of the central building will permit the further consolidation of the general administrative branches of the department, it will not provide much, if any, additional floor space for the department, since the present administration building and the several smaller buildings now occupied on the Mall presumably will be razed when the east and west wings are connected. The real relief from the present unsatisfactory housing situation, therefore, will come with the completion of additional buildings for the department for which pro-

vision is made in the building program. When these additional buildings are constructed it will be possible to bring together the numerous bureaus and offices at present scattered among some 40 buildings, many of which are located at points remote from the general departmental group. This will make for greater efficiency and economy in operation and will increase generally the effectiveness of the service which the public has come to expect from the Department of Agriculture. The actual accomplishment of the entire building program, therefore, will be a matter of extreme gratification not only to all members of the department but to the agricultural industry at large.

GENERAL ADMINISTRATION

During the year the members of the department have continued to cooperate whole-heartedly in the observance of the permanent business policy of the organization, heretofore announced, which is in all matters, whether large or small, to insure value received to the taxpayers for every dollar spent for Federal activities. Typical instances of economies effected, better business arrangements established, etc., during the year have been reported to the Budget Bureau and will be found in the annual report of the director of that bureau for 1926, pages 107 to 124.

In my last report I called attention to the consolidation of the units engaged in work relating to the general personnel and business administration of the department into one office under the supervision of a director of personnel and business administration. The new arrangement has fully justified its establishment. The reorganized plan of operation has concentrated authority and responsibility and provided better and more economical administration. New opportunities for improvement in the methods of conducting Government business and for effecting economies are constantly being encountered and taken advantage of, and in addition a gratifying reduction in personnel and in expenditures for this class of work has been effected during the year in which the plan has been in effect. The United States Bureau of Efficiency also has continued to cooperate with the department during the year and has rendered valuable assistance of the most practical sort through investigations and recommendations concerning personnel and business procedure.

W. M. Jardine,
Secretary of Agriculture.

FINANCIAL STATEMENT

Expenditures, Department of Agriculture, Fiscal Year 1926

Funds expended and obligated for work under the supervision of the Department of Agriculture for the fiscal year which ended June 30, 1926, including road building, totaled $157,485,660.84, classified as follows:

(1) *Regular work*

For regular work of department (activities for which the department is directly and independently responsible), as follows:	
Office of the Secretary	$948, 599. 01
Division of Accounts and Disbursements	75, 247. 71
Office of Information	1, 084, 160. 87
Office of Experiment Stations	330, 872. 36
Extension Service	1, 538, 817. 66
Weather Bureau	2, 431, 090. 47
Bureau of Animal Industry	[1] 12, 625, 199. 81
Bureau of Dairying	509, 143. 83
Bureau of Plant Industry	3, 802, 405. 22
Forest Service	8, 890, 292. 23
Bureau of Chemistry	1, 456, 862. 64
Bureau of Soils	393, 876. 60
Fixed Nitrogen Research Laboratory	240, 601. 49
Bureau of Entomology	2, 482, 768. 65
Bureau of Biological Survey	968, 021. 44
Library	68, 105. 18
Bureau of Public Roads	468, 624. 03
Bureau of Agricultural Economics	4, 747, 719. 08
Bureau of Home Economics	115, 022. 49
Insecticide and Fungicide Board	187, 115. 81
Federal Horticultural Board	687, 832. 92
Packers and Stockyards Administration	401, 415. 05
Grain Futures Administration	100, 033. 10
Farmers' seed grain loans	22, 560. 39
Total expenditures for regular work	44, 576, 388. 04

(2) *Other than regular work*

For work administered by department, supported by Federal funds provided as direct aid to States for special forestry and wild-life conservation work and similar objects, as follows:

(a) Special conservation work:		
Cooperation with States in fire protection of forested watersheds of navigable streams	$652, 322. 88	
Cooperation with States in farm forestry extension and distribution of forest planting stock	81, 242. 04	
Acquisition of lands for protection of forested watersheds of navigable streams	1, 025, 495. 17	
Acquisition of lands for upper Mississippi River wild life and fish refuge	30, 115. 69	
		$1, 789, 175. 78
(b) Colleges and stations:		
Payments to State agricultural experiment stations for research work under Hatch, Adams, and Purnell Acts	2, 400, 000. 00	
Payments to State agricultural colleges for extension work in agriculture and home economics under Smith-Lever Act	5, 880, 000. 00	
		8, 280, 000. 00

[1] Including $3,511,464.16 paid to livestock owners as indemnities for animals destroyed in connection with tuberculosis and foot-and-mouth disease eradication, and $5,033,396.63 for meat-inspection service.

(c) Road construction under Federal-aid roads act of July 11, 1916, as amended and supplemented:		
Payments to State highway departments for cooperative construction of Federal-aid highways	$89, 362, 110. 64	
Forest roads and trails	9, 353, 252. 23	
		$98, 715, 362 .87
(d) Forest Service receipt funds:		
Payments to States for benefit of local roads and schools (national forest receipts)	1, 271, 275. 69	
Roads and trails for States (national-forest receipts)	677 935. 88	
Cooperative work, consisting principally of forest road and trail construction, also improvements, fire prevention and suppression, disposal of brush in timber sale operations, and investigational work (paid from private contributions)	2, 042, 034. 20	
Refunds to users of national-forest resources of moneys deposited by them in excess of amounts required to secure purchase price of timber, use of lands, etc	133, 488. 38	
		4, 124, 734. 15

Total expenditures for work administered by department (other than regular work)	$112, 909, 272. 80
Total expenditures for regular activities of and work administered by department	157, 485, 660. 84

Expenditures for Regular Work

(1) Net cost of work

As indicated by the foregoing table, total expenditures during the fiscal year 1926 for the research, extension, service, and regulatory functions of the department, or what may be designated as its "regular work" (as distinguished from work supported by Federal funds administered by the Department of Agriculture but made available for direct use by the States or for special conservation purposes), amounted to $44,576,388.04. Partially offsetting this figure, earnings in connection with these activities during the year, amounting to $5,486,616.88, deposited in the Treasury of the United States to the credit of "miscellaneous receipts," and $137,600.91 received as fees for classifying cotton and credited to the revolving fund for that purpose, make the actual net cost to the Federal Government of the department's regular work $38,952,170.25.

(2) Distribution by types of activity

The total expenditure of $44.500,000 for regular work was distributed by types of activity approximately as follows:

	Amount	Per cent
(a) **Research** (including investigations and experiments in animal and plant production, breeding, and improvement, in methods of controlling diseases, insects, and other animal and plant pests, for soil and fertilizer studies, for the investigation of farm management, marketing, and crop utilization problems, and other scientific studies and investigations of the fundamental problems of agriculture, horticulture, forestry, etc., by means of laboratory and field experiments)	$10, 300, 000	23. 1
(b) **Extension work** (demonstration and educational work by means of county agricultural and home demonstration agents, through exhibits, motion pictures, or otherwise, with a view to the dissemination of the information developed by the experiments and discoveries of the department and the various States)	2, 300, 000	5. 2
(c) **Eradication or control** (direct control or eradication of plant and animal diseases, insects, and other pests, through organized campaigns, either independently or in cooperation with State agencies)	9, 300, 000	20. 9
(d) **Service work** (including such activities as the administration and protection of the national forests, the weather service, crop and livestock estimating, market news services, shipping-point and terminal-market inspection service on perishable farm products, and other work of like character for the benefit of the public, not primarily involving research or the enforcement of special laws of a regulatory nature)	12, 900, 000	29. 0
(e) **Regulatory work** (administration of regulatory laws, such as the food and drugs act, the meat inspection law, the migratory-bird treaty act, the grain standards act, warehouse act, etc.)	9, 700, 000	21. 8
Total	44, 500, 000	100. 0

Income from Department's Activities, Fiscal Year 1926

Incident to the department's work during the fiscal year 1926 direct receipts aggregating $8,829,953.15 were covered into the Treasury and fines were imposed and judgments recovered by the courts amounting to $111,911.18 in connection with the enforcement by the department of the regulatory laws which devolve upon it for administration and execution, as follows:

(1) *Receipts*

Deposited to credit of miscellaneous receipts fund.			
Regular work—			
From business on the national forests	$4,641,415.72		
From other sources	845,201.16		
		$5,486,616.88	
Work administered (other than regular work)—			
10 per cent of net receipts from business on the national forests appropriated as a special fund for forest road and trail construction in 1927	514,205.38		
Proceeds from sale of surplus war materials transferred to States for road-construction work	114,817.35		
Contributions from private cooperators appropriated as a special fund for road and trail construction, fire protection and suppression, brush disposal, and investigative work on national-forest and privately owned lands	1,925,149.98		
		2,554,172.71	
Total deposited to credit of miscellaneous receipts fund			$8,040,789.59
Deposited to credit of applicable funds of department:			
Fees collected for classifying cotton deposited to credit of revolving fund for conducting this work		$137,600.91	
Reimbursement to various appropriations of department for expenditures made therefrom		651,562.65	
Total deposited to credit of funds of department			789,163.56
Total receipts			8,829,953.15

(2) *Fines*

Fines imposed and judgments recovered by the courts in connection with violations of statutes entrusted to Department of Agriculture for enforcement	111,911.18
Total direct income from activities of Department of Agriculture	8,941,864.33

WHAT'S NEW IN AGRICULTURE

ABACÁ in the Tropics of America A collection of approximately 1,400 selected plants of six of the leading varieties of abacá, or "manila hemp," was brought from the Province of Davao, Philippine Islands, to the Canal Zone during the summer of 1925. This achievement is the successful culmination of two years' effort on the part of the department to establish abacá in the America Tropics.

Abacá fiber is the raw material from which manila rope is manufactured. The entire world supply of this fiber, with the exception of a few hundred bales produced in Netherlands India, is obtained from the Philippine Islands. The production of abacá is one of the leading industries of the Philippines, and the exports of this fiber in 1925 were nearly 350,000,000 pounds. The annual consumption of abacá in the United States is about 150,000,000 pounds.

The present production of abacá is barely sufficient to meet the world demand for this fiber. Many of the abacá growers are now planting coconuts in fields that were formerly planted to abacá, and two different plant diseases that have appeared during recent years have either damaged or entirely destroyed the abacá crop on limited areas. It has been apparent, in view of these conditions, that an effort should be made to establish the abacá industry in tropical regions other than the Philippine Islands.

Plants From Five Plantations

The collection of abacá plants brought to the Canal Zone was obtained from five different plantations, and included the leading varieties of abacá in Davao Province. In making this shipment of plants, an effort was made to determine the relative value of different kinds of propagating material, and also to ascertain the best

methods of packing this material. The shipment included seed, buds, suckers, and rhizomes. The seed was shipped both in cold storage and packed in charcoal. Approximately 500 buds, suckers, and rhizomes were planted either in soil or sphagnum; about 100 suckers and rhizomes were packed in charcoal; and about 850 rhizomes were wrapped in paper and excelsior and shipped in crates.

Of the total collection of 1,438 plants, 1,052, or 73.2 per cent, were alive, and 769, or 53.5 per cent, were in good condition when the shipment arrived at its destination. These plants were shipped a distance of more than 10,000 miles, and a period of 129 days elapsed from the date, June 4, on which the first plants were collected in Davao, until the last were unpacked and planted, on October 10, at the plant quarantine station on Columbus Island, Panama.

After undergoing a six-months period of quarantine on Columbus Island, four different field plantings of abacá were made at widely separated places. These plantings are at Tela, in northern Honduras; at Almirante, in the northern part of the Republic of Panama; on Columbus Island; and in the Plant Introduction Gardens at Summit, Canal Zone. The climatic and soil conditions at Almirante are exceptionally favorable for abacá, and the major part of the acclimatization work will therefore be done at this place.

The abacá plants have thus far made a satisfactory growth, but it will be necessary to continue the experimental work for a period of at least two years before it can be fully determined whether or not it will be practicable to produce abacá on a commercial scale in Tropical America.

H. T. EDWARDS.

AGRICULTURAL Education in United States The progress made in agricultural education in the institutions of this country for the past few years has been very satisfactory. After a period of expansion and experimentation, the work has settled down and is now fairly well organized. A better conception of the fields occupied by the different grades of institutions prevails and a spirit of helpful cooperation is manifest. The relation of the United States Department of Agriculture with the various State educational institutions has been extremely harmonious and helpful.

Many of the colleges of agriculture have shown a decrease in attendance the past four years. Whereas in 1921 they reported an enrollment of over 15,000 students, in 1925 they reported slightly under 12,000 in attendance. During the years 1918 and 1919 the attendance dropped from 14,000 to some 10,000 students. In 1921 there was a sudden increase to over 15,000, but this number was not held as the attendance decreased about 1,500 in 1922. The decrease noted in 1918 and 1919 was undoubtedly due to war conditions and the following increase to 15,000 was a reaction naturally following earlier events. The decrease from the high point in 1921 has been due to numerous factors, such as the lessened farm income which has reduced the ability of farmers to send their children to college, and has led those who went to college to seek training in more remunerative fields. The graduates of these colleges, however, have increased in numbers from 3,024 in 1917 to 3,678 in 1925.

One of the marked developments in agricultural education during the past few years has been the establishment of teacher-training departments in the land-grant colleges. These departments are variously designated, but they, one and all, are concerned in the training of teachers of agriculture for the schools of our country. The department for the training of agricultural teachers that has had the longest continuous existence was established at the South Dakota College of Agriculture. This department antedates the passage of the Nelson amendment (1907).

The Nelson Amendment

The Nelson amendment made provisions for further endowing the land-grant colleges and provided that these colleges "may use a portion of this money for providing courses for the special preparation of instructors for teaching the elements of agriculture and the mechanic arts." During the five years directly following the passage of this act, 7 more teaching departments were established, and during the next five years 12 were added.

Some years later, in 1917, the Federal Government passed what is known as the Smith-Hughes Act establishing vocational agriculture and mechanic arts in high schools throughout the country. This act increased the demand for college-trained teachers and opened a much wider field for instruction in agricultural teaching. At the time of the passage of the Smith-Hughes Act (1917) there were 20 departments of agricultural education in land-grant colleges existing and functioning. To-day every land-grant college has such a department that is filling a valuable place in the field of agricultural education.

Owing to a marked increase in the demand for agricultural teachers in our secondary education, due to the development of the Smith-Hughes schools, the various departments established for the training of such teachers in land-grant colleges have shown a healthy growth. Directly following the passage of this act, great difficulty was experienced in obtaining adequately prepared instructors and it was some time before satisfactory teacher-training staffs were obtained. It would have undoubtedly been better if provisions had been made to establish these training departments several years before the other sections of the act were put in operation. As it resulted, teacher-training departments were developed alongside the vocational schools and there was much to be adjusted before a smooth working program could be carried out. At this time sufficient experience has been gained to correlate the work to better advantage.

Wide Range of Subjects Offered

A rather wide range of subjects is offered by the different colleges under the name of agricultural education. In some institutions, notably those universities wherein the agricultural work forms a department rather than a separate school, the field of agricultural instruction is limited to two or three special courses such as problems peculiar to agricultural teaching and those dealing with supervised teaching. All other subjects, though closely related to agriculture, are relegated to the academic departments of the institution. Wherever there is a separate land-grant college established in a State a

much broader range is given to the courses offered. In addition to strictly agricultural topics, the subjects of educational psychology, general psychology, principles of teaching, vocational education, and educational administration are often presented. In some institutions the departments of agricultural education are not limited to agricultural subjects but include in their curricula professional training for home-economics teachers, for boys' and girls' club work, and for a certain amount of extension work that seems to be in demand in this field.

The greatest impetus given to agricultural education in general was the passage of the Smith-Hughes Act in 1917. This bill established vocational agriculture in the secondary schools of our country and made provisions for evening and part-time classes wherever they could be expediently established. This measure opened a broad field in both agricultural and mechanic arts which was immediately occupied by every State in the Union. Under the provisions of this act $500,000 was made available to the States from Federal funds for the fiscal year beginning July 1, 1917, and this amount has been increased yearly until now, in 1926, it amounts to $3,000,000; which will represent the annual contribution of the Federal Government to the cause of vocational training unless amended in some way in the future.

Vocational Agricultural Teachers

In 1918 there were 40 institutions that were training vocational agricultural teachers under the terms of the Smith-Hughes Act. In 1925 this number was increased to 70. The number of pupils enrolled in vocational courses throughout the country has increased very materially, thereby showing that vocational agriculture is becoming more and more popular as time has gone on. In 1918 there were 164,186 students of both sexes in the vocational schools, while in 1925 this number had increased to 659,370.

While there has been a healthy growth in the patronage of these schools, there has also been a marked advance in the methods of instruction. Programs for agricultural teaching activities have been made in the various States and have been sanctioned by the Federal board that are both intensive and progressive. The entire basis of teaching the subject of agriculture has been changed from the older academic methods to the more progressive vocational types. Job analysis planned on actual farming experience has replaced the old textbook procedure. Problems, projects, managerial jobs, operative jobs, and farm enterprises are terms that are met with now when one discusses advancement made in teaching methods. A great deal of time and thought has been given to part-time instruction and the effort has been to carry the teaching idea directly to the worker in the field wherever practical. Probably no educational activity in recent years has had as marked an influence upon professional ideals as this Federal vocation act.

Besides the Smith-Hughes vocational schools there are a number of other high schools in each State that teach the subject of agriculture. These schools receive no Federal aid but depend either upon an endowment or on State funds for their support. The curricula in these institutions are generally formulated along lines that approximate

Smith-Hughes work and include as much practical field work as is possible with their equipment. Some of these high schools have developed courses in what they term prevocational agriculture while others frankly present this subject for its informational value alone, much as they present history or geography.

Elementary Education in Agriculture

In the field of elementary education, the teaching of agriculture is required by law in 19 States. Twelve States require this subject to be taught in their high schools. Two of the States, Pennsylvania and South Dakota, require the subject in the high schools and not in elementary schools. In five States the subject is specifically permitted by law while in another five there is special State subvention of agricultural courses in the elementary schools. In some States, as Arizona, Delaware, Idaho, Indiana, Kansas, Maryland, New Mexico, Oregon, Utah, Washington, and West Virginia, State boards of education may prescribe courses of study for public schools and may include agriculture.

There has been much difference of opinion among authorities as to the place agriculture should occupy in the curriculum of the elementary schools. The recent development of junior high schools and the better development of a six-year elementary school have helped to clarify the situation somewhat. A recent survey of teachers and specialists in education has shown that 64 per cent of the teachers and 47 per cent of the specialists reporting believe that elementary agriculture should be educational rather than prevocational. None of the specialists and only 10 per cent of the teachers reported their belief that elementary agriculture should be strictly vocational. There is still a strong belief with many that this subject should be taught prevocationally in the rural schools; 19 per cent of the teachers and 26 per cent of the specialists give this as their opinion.

The work now being done in the elementary classrooms as agricultural teaching is very chaotic and needs to be standardized whatever type of teaching may finally be accepted.

In many States the laws for teaching this subject are seldom enforced and the presentation of agriculture by the rural teacher is very unsatisfactory, even under the best conditions. Definite objectives are seldom made and when made are frequently obscured by irrelevant material. The movement in elementary schools seems to be away from the vocational objective, and, under existing circumstances found in these schools, this is not to be greatly lamented. One authority in summing up the situation remarks that "students of the problem are accepting the view that instead of using instruction in agriculture in the elementary school for vocational ends or as propaganda for farm life, it should take its place as a part of the program of instruction for vocational and educational guidance, or the 'teaching for choice.'"

Prevocational Study

A course of study that is frankly prevocational is gradually being introduced in these schools. Its major object may be enumerated as follows: (1) Problems involving the essential life relations of the

farmers; (2) comparative study of occupations; (3) sampling of jobs as are met with in farming; (4) providing training in method of attacking problems; (5) motivating agriculture with other subjects in the curriculum; (6) furnishing guidance; and (7) acquainting pupils with various State and national farming agencies. This suggests a course of procedure that seems adapted to the elementary schools and at the same time furnishes an excellent background for future vocational and research work in agriculture.

F. A. MERRILL.

AGRICULTURAL Engineering and Farm Efficiency In America, modern productive industry as a whole, except agriculture, submits itself to engineering planning and guidance. The result has been a great increase in the rate of production by the worker. The statement has been made that engineering has been the chief factor in causing the value of the product of one hour of labor by the industrial worker to exceed so greatly that of one hour of labor in agriculture. Manifestly, there-

FIG. 1.—The proper laying out and construction of terraces for the prevention of erosion call for the services of the agricultural engineer

fore, the great task of the agricultural engineer is to aid in increasing the productive efficiency of the agricultural worker and to bring him to an equality with the industrial worker. An agricultural engineer is defined as a qualified engineer who, with adequate knowledge of the principles and practice of agriculture, devotes himself to the application of the art and science of engineering to agriculture.

Indications are already at hand, as shown in investigations started by the Department of Agriculture in activities of agricultural engineering organizations of the colleges, and in discussions before the American Society of Agricultural Engineers and in agricultural

and engineering periodicals, that a motivating realization of this opportunity and its attendant obligation has matured in agricultural engineers.

The engineers who have undertaken these investigations have given heed to the suggestion that the problems be approached with minds open to the utmost. They propose, accordingly, to accept nothing on the sole basis of tradition or established usage, and decline to assume that present methods, machines, implements, or layouts are of even proper type or are based on correct fundamental theory or principles.

Some Practices Never Reviewed

The justification for this attitude lies in the fact that many of the methods and devices now in general use never have been subjected to review, in respect to their fundamentals, in the light of the

FIG. 2.—Block made of rammed earth to use in a study of the structural qualities of that material. Agricultural engineers are studying and experimenting to find more suitable materials for farm structures.

knowledge of natural principles which has accrued since they were introduced. It permits the constant application of the old injunction laid upon us to "prove all things, hold fast to that which is good," and at the same time frees the investigator from an undue regard for precedent and sets him on the way to improvement of whatever nature or degree, ranging from the slightest modifications to the most complete and revolutionary changes.

If this is the correct attitude for the engineer-investigator to assume, then the farmer should acquiesce and give his moral support, to the end that undue conservatism on his part may not impede progress.

Each item of increase in efficiency of production augments the income upon which the farmer may draw to raise the standard of his living. In order that his expenditure in this direction may yield maximum returns in comfort, health, and enjoyment, engineering thought, training, and principles must be brought to bear in the

adaptation to rural conditions of the material means whereby the standards of living in the cities and towns are advanced, in the invention of means to supplement or supplant these when they are found to be not adaptable, and in going beyond this to devising comforts and conveniences which rural conditions may make possible but which may not be evolved under urban conditions.

Stated in general terms, the direct objectives of engineering service to agriculture are: (1) To increase the rate of production of the worker; and (2) to improve the conditions of life on the farm. When some of the avenues of approach to these objectives are considered, it becomes manifest that the agricultural engineer should be able to progress in the desired direction.

A competent agricultural engineer should know, better than any one else, the treatment which machines receive on the farm, the proper economic balance between the cost of a machine and its life

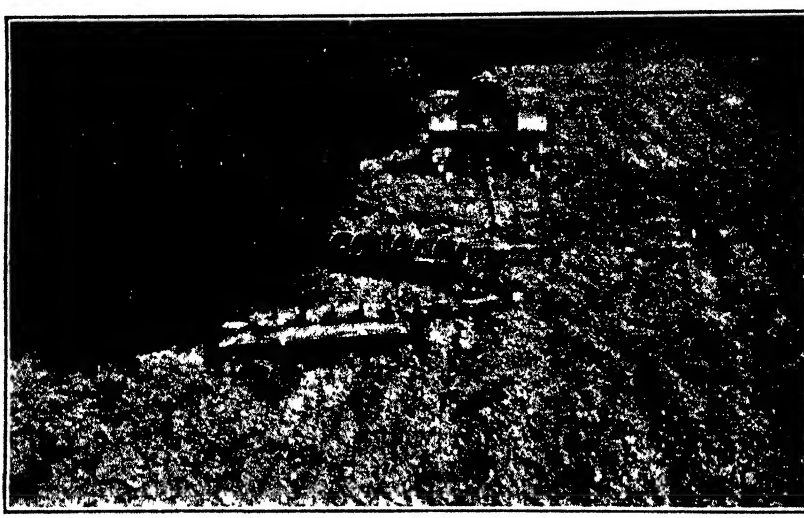

FIG. 3.—By taking advantage of the dynamic principles defined by agricultural engineers it is possible to increase the utility of the disk harrow for use in orchards and on ditch banks. Note the offset without side draft

in hours of service, and other factors which determine the benefit to be derived from machine utilization—in short, the requirements of farm machines and the real problems of the farmer in relation thereto. With this knowledge and with his specialized engineering and scientific training, he can conduct investigations to the best effect and design in accordance with the proved findings of himself and others. This relates not only to machines and implements used in the growing and handling of crops, but also to those for the dairy, poultry, or other special industry on the farm, and to those calculated to expedite, simplify, and reduce the labor involved in the care and handling of livestock and in maintaining the household.

Generally Applicable Solutions

Many of the problems thus contemplated are of a nature such that a correct solution will be of general application. Others of them

assume forms more or less special to each individual farm. The latter statement is distinctly true when the use of power on the farm is considered. Then, as a rule, it will be found that competent engineering consideration of the particular case, taking account of loads, rates, and mechanical efficiencies, will point the way to material economies. Rural architecture and farm and farmstead layouts also tend to assume individual form. Farm irrigation and farm drainage present individual characteristics. The best solution of all such problems demands the personal contact of the engineer and the farmer. Whether the engineer may serve as completely and efficiently in agriculture as he does in other industry, and whether a thoroughly effective relation of the agricultural engineer to the farmer can be established depends in a large degree upon the practicability of evolving some scheme of general application for bringing the two together to their mutual profit and advantage.

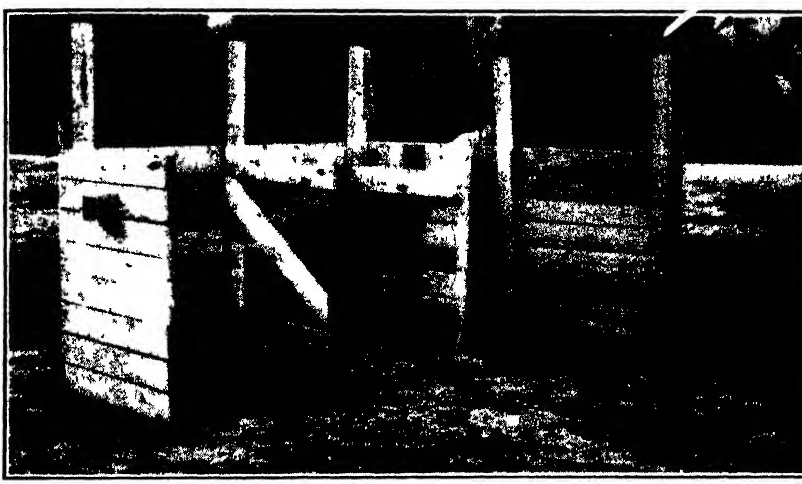

FIG. 4.—Forms for a single-chamber septic tank, designed by an agricultural engineer for repeated use. Such a set of forms has been used more than 60 times.

The farmer is the direct employer of the engineer to a limited extent only. Large estates frequently retain engineers. Engineering service in some degree is quite generally a requirement for the successful installation of a farm drainage or irrigation system. Usually, however, the only engineering contact which the farmer experiences is that provided by the extension activities of the Government and the agricultural colleges, by manufacturers and dealers who have something which the farmer needs, and by those who would supply electric power for farm operations. Objection can be made to all of these on the score of the inadequacy of the service which it is possible to render. The public agencies can not engage to solve the individual problems of all of the farmers. Service direct to individuals should be rendered only as an object lesson or demonstration of somewhat general application. Service through the farm advisor as intermediary from the engineer to the farmer is helpful, but it falls short as compared with direct service on the ground. The service rendered by the engineers of commercial firms or organizations is

often of the best, once it is decided to use their products, but it can scarcely be expected that the full light will be turned on for comparison with the products of competitors.

Private Clients Few

The engineer, other than agricultural, usually has as clients or employers those who are able and who expect to pay what he must have in order to return him a net income which takes account of the time and expense involved in planning and direction of work and also of his investment in education and training. For a considerable number of agricultural engineers there is salaried employment to be had, with either public or private agencies. The one who aspires to a private practice in agricultural engineering, however, finds the assured field decidedly limited in extent. The

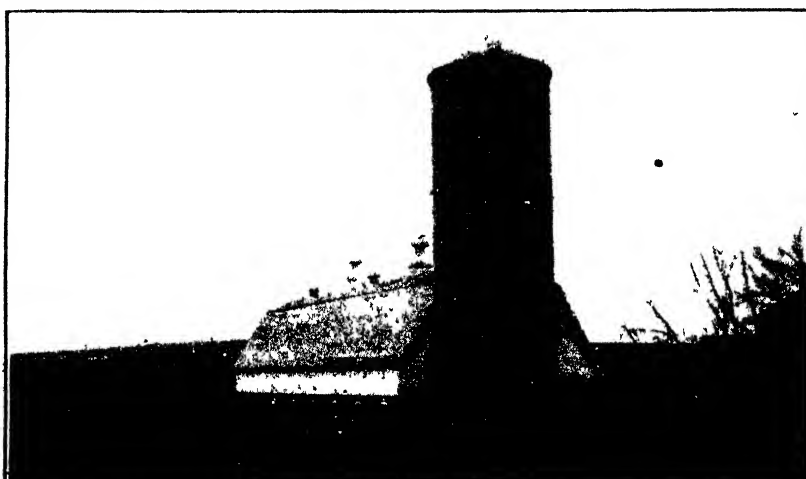

FIG. 5.—The dairy farmer finds the services of the agricultural engineer of great value in the design and construction of his barn and silo

individual farmer, operating on the ordinary scale, can afford to employ and pay for the direct service of the engineer in only small measure or under special circumstances, or under conditions not now existent.

The question as to how it is to be made practicable for the individual farmer to receive disinterested and complete engineering service has not been answered.

Civil engineers in numerous instances in the past have located in small towns or in rural communities and have been able to adapt themselves to the conditions encountered and to establish themselves in ways that are eminently satisfactory to those whose tastes and temperaments do not demand the perspective and the intensity of action that go with the large engineering undertakings. This gives rise to the suggestion that an almost unlimited number of young agricultural engineers might distribute themselves in this way over the country and become available for the direct service of the farmer. Although space does not permit the discussion of

this proposition at length, a few relevant points may be noted. It has been remarked by teachers of agricultural engineering that the majority of students of that branch are "country minded." The life in the small town or rural community does not require the personal and business expenditure which an urban establishment calculated to serve larger territory demands. In the country it may be convenient, agreeable and appropriate—more so than in the city—that a somewhat inadequate income from engineering be supplemented by other means, or that practice in agricultural engineering be combined with that in some other line, such for instance as small-town engineering. Other items of this nature will suggest themselves.

It can not be expected that the farmer will ever acquire the general habit of resorting to centers of population for his direct engineering advice. The engineer must be brought within easy reach, and must, moreover, be in proper degree aggressive to demonstrate his value.

Agriculture has been the laggard amongst the industries in recognizing the degree of its dependence upon engineering. That progress has been made to remedy this condition is chiefly due to a small group of pioneer agricultural engineers who have been foremost in the emergence of that branch of the engineering profession. The continuance of this progress will depend largely upon agricultural engineers. So far as promoting between farmers and engineers the understanding and appreciation which have been lacking, it is submitted that the agricultural engineer resident in the agricultural community is exceptionally well chosen and placed for that task.

W. W. McLaughlin.

Alfalfa Wilt Due to Bacteria

What is the trouble with my alfalfa? Is it unfavorable soil, winter injury, or disease? This question has come to the Department of Agriculture and the State experiment stations from many alfalfa growers during the past three years. The conditions in alfalfa fields that have given rise to this question are several. It is said that stands of alfalfa now die out in 3, 4, or 5 years where they once lived much longer; or that the stand has died out in spots; or that it is lacking in vigor. These complaints have come from many places, especially from the central and southern Mississippi Valley, and also from some irrigated districts.

It has not always been possible to say what cause has been operating and often it has appeared that more than one is concerned, but as a result of the attention which these complaints have focused upon the alfalfa crop, one fact has become clearly apparent. There is in the United States a bacterial wilt disease of alfalfa which was not previously recognized. This disease is responsible for a great deal, if not for the larger part, of the trouble that growers have experienced. Moreover, it appears that bacterial wilt, which now occurs in at least a few fields in practically every alfalfa-growing district of the United States, may easily become more thoroughly disseminated than at present and thus assume an importance by far the most serious disease with which alfalfa culture must contend in some districts.

Bacterial wilt has doubtless remained unrecognized for a long time because only badly diseased plants show distinctive indications of the trouble. The organism causing the disease enters the water-carrying vessels of the plant through wounds and passing downward through the taproot and upward through stems may become abundant without apparent injury to the plant. At length, the entire plant may wilt suddenly on a hot day. Later in the summer some of the roots, in which the parasite has caused a stoppage in many of the water-carrying vessels, produce short pale-colored spindling shoots with small, narrow leaves. When the taproot of such a plant is cut across, the woody portion of the root is found yellow and discolored close beneath the bark. When the bark is stripped back the wood is found yellow or brown, altogether unlike the white wood of healthy plants. This discolored wood distinguishes this disease from winter injury and other troubles.

Investigations Under Way

This disease is now being studied both by the Department of Agriculture and by men in several State experiment stations to determine among other things where the disease is now causing damage, how it is carried from field to field, when and through what kinds of wounds it most frequently enters plants, and whether there is varietal resistance to the disease. In many districts, especially where rainfall is abundant, or excessive irrigation water is supplied, the wilt disease is undoubtedly the most serious that has threatened alfalfa culture.

FRED R. JONES.

ALFALFA Seed from Abroad

The average annual importation of alfalfa seed for the years 1920 to 1925 was nearly 9,000,000 pounds. Of this quantity, about 7,000,000 pounds, or enough for sowing 350,000 acres, is regarded as undependable for our Northern States. Losses from the use of this imported seed amount to hundreds of thousands of dollars and have resulted in efforts to protect the farmers through the passage of a seed-staining bill by the Sixty-ninth Congress.

The commercial alfalfas of the world are represented by two groups, namely, the common or purple-flowered alfalfa, *Medicago sativa*, and the variegated alfalfas, which are largely the result of a natural cross between the yellow-flowered alfalfa, *M. falcata*, and the purple-flowered alfalfa, *M. sativa*. Within each of these groups are numerous strains varying widely in ability to withstand cold and drouth, and in other characteristics. With the exception of seed received through Canada, which is largely of the variegated type, practically all of our imported seed is of the common variety.

Like many of our cultivated plants, the environmental conditions under which alfalfa is grown for any considerable length of time exert a marked influence on its characteristics. Where natural selection has taken place in a cold climate, the tender, rapidly growing plants have been eliminated and this has resulted in a strain best suited for growing under conditions of severe winters and long summer days. Where alfalfa has been grown several seed generations

in a warm climate, the hardier and slower growing plants are gradually eliminated by the more rapidly growing and less hardy individuals, and this has resulted in what we term "a southern strain," capable of making its best development under a relatively short day.

Adaptability of Vital Importance

Since climatic conditions exercise such a marked influence on the characteristics of alfalfa, it is no wonder that interest should develop in the source of imported seed. This factor is of vital importance to the farmers in the northeastern section of the United States, which represents a great part of the alfalfa-seed consuming section and the part in which, due to the rather trying conditions to which the crop is subjected, the variety of alfalfa is of greatest importance.

At one time practically all the alfalfa seed imported commercially came from Turkestan, the demand for seed from that source having been stimulated by the favorable results obtained with seed produced

Fig. 6.—Alfalfa variety test after having passed through the first winter at Ames, Iowa. A, South African; B, Italian; C, Grimm; D, Le Beau; E, African; F, Argentine

in the cold, dry regions of that country. It soon became apparent, however, that while Turkestan alfalfa seed did fairly well in the cold, dry portions of the United States, poor results followed its use in the humid East, where it appeared so susceptible to disease that stands were destroyed in a relatively short time, usually in two or three years. This situation resulted in extensive unfavorable propaganda, which, coupled with the unsettled condition in Russia during and following the war, probably accounts for the decline in importations until in recent years the quantity received from that source has been very small.

With the decline in importations of alfalfa seed from Turkestan, Argentine seed appeared on the market in considerable quantities, importations averaging about 4,000,000 pounds annually between 1920 and 1925. The lowest temperatures recorded in the various important alfalfa-seed producing districts of Argentine range from 10° to 18° F., a condition which is not conducive to the development of a hardy variety or strain, particularly if the original seed, as seems to be probable in this instance, was of a nonhardy type.

Where Argentine seed has been grown in the northeastern section of the United States, whether by farmers or in experimental tests, the plants have sometimes killed out almost completely the first year, and where not destroyed the first year, the stand has generally suffered serious injury the second or third year, while Grimm and Canadian Variegated alfalfas, developed under more severe conditions, ordinarily survive with little or no injury. At Spooner, Wis., 85 per cent of the Argentine plants died the first winter, whereas only 57 per cent of the Kansas plants and 17 per cent of the Grimm plants were lost. At Ames, Iowa, the winter killing in three lots of Argentine alfalfa ranged all the way from 75 to 100 per cent, while the losses in the various Grimm plots were from 0 to 2 per cent, and in the Kansas plots 50 to 70 per cent. Similar results have been obtained in several other Northern States. In a few cases, however, where conditions are very favorable to alfalfa, and in mild winters

FIG. 7.—Alfalfa variety test after having passed through one winter at Ames, Iowa. A, Dakota Common; B, Turkestan; C, Spanish; D, Ontario Variegated; E, African

Argentine alfalfa has come through with little injury even in the Northern States. In the southern half of the United States the Argentine alfalfa has given results comparable to domestic strains of common alfalfa.

South Africa Alfalfa

South African alfalfa seed has in recent years been offered on the markets of the United States and the potential possibilities for the production of seed in that country would seem to be great. Although tests conducted with South African seed are limited in number, and cover a short period, the results are rather striking. The commercial lots of seed received from that source have appeared appreciably more susceptible to winter killing than Argentine seed, plots often killing out 50 per cent the first winter where the Argentine alfalfa came through very satisfactorily. This would indicate that some of the seed at least is produced under milder climatic conditions than are found in the seed-producing districts of Argentina. While minimum temperatures of 10° F. are occasionally reported at the higher altitudes in South Africa, still much of the seed is produced where the temperature seldom falls below 20°. At Ames, Iowa, South African alfalfa killed out 100 per cent the first winter; at

North Ridgeville, Ohio, 80 per cent; at Morgantown, W. Va., 95 per cent; and at Dickinson, N. Dak., 94 per cent.

In accordance with recent legislation the Secretary of Agriculture has issued an order requiring that Turkestan and South African alfalfa seed be stained red to the extent of 10 per cent as being unadapted for general agricultural use in the United States.

Canadian Seed Satisfactory

Canadian seed has been coming into the United States in considerable quantity for the past few years. Most of this seed is of the hardier types such as Grimm and Canadian Variegated, and as it has been produced under conditions at least as severe as the winters in our Northern States, it is highly regarded and has proved as satisfactory in the northeastern part of the United States as our domestic strains.

Other countries from which imports of alfalfa have been received from time to time are Germany, France, Italy, and Spain. Although seed from these countries has given variable results, that from Italy and Spain generally produces plants that are nonhardy in our Northern States, since the seed is produced under mild climatic conditions; whereas that from Germany and from certain parts of France where the winters are more severe withstand more cold in the United States, though in general not sufficiently hardy for our most trying conditions.

H. L. Westover.

ALFALFA Weevil Control Methods The alfalfa weevil attacks an important crop in such numbers, with such disastrous adroitness, and with a capriciousness so baffling to preventive treatment, that it has excited the interest of farmers, produce dealers, extension workers, quarantine officials, and entomologists wherever alfalfa is grown or consumed.

The importance of alfalfa in the great plateau region where the insect is now established depends less upon the acreage and the value of the crop than upon the vital part which it has played in the settlement of that country and which it still plays in its agriculture, industry, and commerce. This region lies nearly or quite a mile above sea level, parching for want of the rain which during most of the year is withheld from it by the western mountains; and the traveler of to-day, as its panorama of somber ranges and stark plains flits past the windows of his automobile or railway car, finds it remarkable for little besides monotony. Sometimes the glint of sun on August snow or the fragrance of distant, unseen pines on the evening breeze may arouse him to an idle question, as may the infrequent oases of green; but the question is oftenest "How does anyone manage to live in this place"?

Nevertheless, there is a story written in the sage-gray plains and slopes, with their obscure wagon tracks and their oases of alfalfa. This was once the "Great American Desert" of our fathers' school geographies; now it is the "Inland Empire" of railway folders and commercial-club booklets. Over the meandering wagon track, now

overgrown with tumbleweeds and drifted full of sand, men and women plodded toward the gap between two gray hills, riding when they could and when their horses failed toiling afoot. For that dim track meant water. Where a trickle of water from a spring in the hills moistened a little of the desert they planted their precious seeds. When summer dried up the springs, the tender crops brought from the old home died, but the alfalfa lived; with the tenacity bred of a thousand rainless summers its roots followed the retreating moisture into the earth and held on. It wintered the herds when they came home from the summer range, and helped to fatten the cattle, the only product which could be marketed. It escaped from the fields and flourished in roadsides, streets, gardens, and the graveyards where the pioneers were laid.

Today the railroads and the great irrigation projects are here, and no one travels the old roads to hidden springs in the hills. Alfalfa still fights back the desert and maintains the herds, and it also produces forage for the cattle of the Corn Belt itself.

Farmers Surprised at Damage

Alfalfa grows so luxuriantly that most insect pests make little impression upon it. It is no wonder that farmers had come to regard it as immune to attacks of that sort and were disturbed to see their crops being destroyed by the alfalfa weevil after that insect was introduced from the Old World. The green larvæ appeared in the tips of the plants in countless thousands, feeding at first in tunnels in the heart of the terminal bud and later spreading out over the leaves. Every day brought a fresh horde of newly hatched larvæ, which always first attacked the buds, where they could do the most harm. Once the buds were killed by these small larvæ, the older ones soon stripped the green tissue from the leaves, and the field, unable to produce new growth, first took on a gray tinge and then turned white as if frostbitten. The longer the crop was left standing, the worse became its condition, until, in extreme cases, even the skin covering the stems was eaten away, and of the whole plant nothing remained but a handful of woody fibers, crumbling to dust and worthless as forage.

After the wreckage of the first cutting had been removed, the larvæ, many of which were left in the field, cleaned up the scattered foliage of the stubble and then turned their attention to the sprouts which were already starting from buds near the surface of the ground, and destroyed them almost at once. As fast as other sprouts pushed up from below they were treated in the same way, and for about three weeks, or until the larvæ had finished feeding and prepared for their final transformation into the adult beetles, there was no chance for the second crop of alfalfa to begin growth.

This period of three weeks is about the term required for the production of the second cutting. Although this period ended the ravages of the pest for the year, the later cuttings being unmolested and the egg laying of the new generation of beetles deferred until late fall and the following spring, the total damage amounted to nearly half the annual yield, even in the comparatively well-watered districts near Salt Lake City, where the damage was first felt.

In the surrounding valleys, where, because of higher altitude or scarcity of late-season water, no more than one or two cuttings could ever be obtained, the alfalfa crop might be almost a total loss. In addition, in the latter localities livestock was the principal product and could not be wintered without forage.

Control Methods

Altogether it was clear that controlling this insect was a problem beyond the reach of the individual farmer, and an appeal was made to State and Federal agencies for help. The Utah Experiment Station speedily ascertained the main facts in the life cycle of the insect and provided an emergency remedy known variously as the "brush-drag," "cultivation," or "dust-mulch" method, by which the farmer, using materials already at hand, could greatly reduce the inroads upon the second cutting.

The Federal Bureau of Entomology took up investigations into the fundamental relations of the insect to its surroundings as a basis for future control experiments, and at the same time tested the more obvious expedients, including substitution of crops, cultivation methods, irrigation, and pasturing. With the cooperation of the Office of Farm Management it selected as the most promising measure the poisoning of the alfalfa-weevil larvæ with arsenical sprays applied to the first crop, and in a series of experiments lasting six years it developed what is now the standard method of controlling the pest.

While engaged in the development of the spraying method the Bureau of Entomology, acting upon a theory that the comparative freedom of European fields from the ravages of this insect was caused by the prevalence of parasites which preyed upon it, imported for study and possible colonization many predacious and parasitic species. One of these, an ichneumon fly which destroys the larvæ, has been established in America and is being studied to determine whether it exercises any practical control of the pest. At the same time other beneficial species are being introduced.

Spread of the Weevil

The alfalfa weevil has not waited idly while the entomologists of the State and Federal Governments proceeded with plans for its overthrow. It has spread slowly but steadily and now has colonies in seven States, as shown by the map (fig. 8) of the infested territory at the close of the season of 1926. The infested counties are as follows:

Utah.—Beaver, Box Elder, Cache, Carbon, Davis, Duchesne, Emery, Iron, Juab, Millard, Morgan, Piute, Rich, Salt Lake, Sanpete, Sevier, Summit, Tooele, Uintah, Utah, Wasatch, Washington, and Weber.

Idaho.—Ada, Bannock, Bear Lake, Bingham, Blaine, Bonneville, Butte, Camas, Canyon, Caribou, Cassia, Clark, Custer, Elmore, Franklin, Fremont, Gem, Gooding, Jefferson, Jerome, Lincoln, Madison, Minidoka, Oneida, Owyhee, Payette, Power, Twin Falls, and Washington.

Wyoming.—Carbon, Converse, Fremont, Goshen, Laramie, Lincoln, Natrona, Sweetwater, and Uinta.

Colorado.—Delta, Gunnison, Moffat, Montrose, Ouray, Rio Blanco, and Routt.

Nevada.—Churchill, Lyon, Mineral, Pershing, Storey, Washoe, and White Pine.

Oregon.—Malheur, Baker, and Union.

California.—Lassen, Plumas, and Sierra.

In its advance into new territory the alfalfa weevil has encountered varied climatic and cultural conditions and has accordingly modified its habits. For example, in the long spring season which is usual in western Idaho the feeding period is so lengthened that two sprayings of the first crop are sometimes necessary; while in the short cold spring which is often experienced in Utah the egg laying, and consequently the number of larvæ, may be so reduced that no spraying is needed. The latter condition, although it is in itself a relief, may conceal a menace, as it has often led whole communities to neglect preparations for spraying, to their eventual loss.

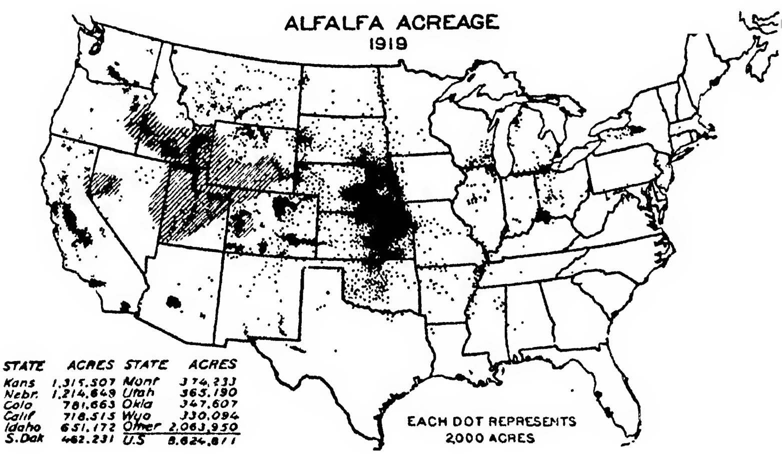

FIG. 8.—Map showing the alfalfa-weevil territory in relation to the alfalfa-producing areas of the United States. The infested districts are shaded. Adapted from Piper et al.

In the absence of any known method of preventing the continued spread of the insect, it may be assumed that it will reach all the alfalfa-growing regions of this continent; and as its destructiveness is governed by natural conditions which are imperfectly understood, it would seem that improvements in the control of this pest are to be sought in improved knowledge of those conditions in order that attacks may be foretold with greater certainty and the methods already available more successfully applied.

GEORGE I. REEVES.

ALKALI in Irrigated Districts The occurrence of alkali salts on the surface or in the root zone of irrigated soils is an abnormal condition indicating that the irrigation water is not passing downward through the soil. These alkali salts are easily dissolved in the soil moisture, so that if there is a gradual or even an occasional movement downward of the soil solution, the dissolved salts are carried with it below the root zone. This is the only way that alkali salts can be removed from the soil.

Likewise, the only way that the accumulation of alkali salts in the soil can be prevented is to apply enough irrigation water, at least occasionally, to leach the root zone.

The reason for this is that irrigation water always contains some dissolved salts, sometimes rather large quantities. This salt that is brought into the soil by the irrigation water is left there when the water is absorbed by plants or lost by evaporation. If the water applied by irrigation never penetrates below the root zone, then the salt brought in by it continues to accumulate in the root zone, where it remains in solution in the soil moisture until the soil solution becomes such a concentrated salt solution that crop plants can not absorb from it the water they need for growth. The injurious effect of alkali salts in the soil solution is due to the fact that the salts in that solution prevent the absorption of water by plants rather than that the salts are absorbed by the plants and act as poisons in the plant system. Most crop plants can absorb water rapidly enough to supply their growth requirements from an available soil solution that contains less than 1.5 per cent of mixed salts. When the salt concentration of the soil solution gets much above that point, crop plants begin to show symptoms of injury. These symptoms of alkali injury closely resemble the symptoms of drought injury because the plant can not absorb water normally from a strong salt solution nor from the soil when the moisture content is below the wilting point.

The Aim of Irrigation

The aim of careful irrigation should be not only to supply the water needed by the crop for its growth requirements but enough in excess to insure a cumulative downward movement of water through the root zone in order to prevent the accumulation in that zone of injurious quantities of soluble salts. It is not necessary or even desirable that this leaching of the root zone should go on continuously or that more than a small part of the water applied should pass out below. But it is essential to the sustained productivity of irrigated land that the root zone should be leached to some extent at least occasionally.

It would not be a difficult matter to apply irrigation water in sufficient quantity to leach the root zone and thus prevent the injurious accumulation of alkali salts in the soil solution if the soil and subsoil were both readily permeable to the movement of water. Where both soil and subsoil permit excess water to move freely in response to the force of gravity there is no alkali problem. It is only where a condition of impermeability exists either in the soil or in the subsoil that alkali troubles occur.

When the soil is permeable and the subsoil is impermeable to the movement of excess water, artificial drainage must be provided. In many irrigated sections subsoil impermeability occurs in the form of subsurface bars or dikes of tight or cemented material. These bars or dikes interfere with the free movement of excess subsoil water in the direction of the natural drainage outlets, such as creeks and rivers, and it becomes necessary to cut artificial channels through these barriers to afford relief. These artificial channels may be open ditches or covered lines of tile.

In planning a drainage system for a tract of irrigated land it is desirable to recognize the fact that the excess of subsoil water may originate from either of two sources. It may come chiefly from percolation through the root zone of irrigated fields or it may be due chiefly to seepage losses from irrigation canals. The importance of ascertaining the chief source of troublesome accumulations of subsoil water lies in the fact that one system of drainage is required for one of these situations and another system is required for the other. Where the excess of subsoil water comes chiefly from root-zone percolation, the indicated method of relief is to locate the impermeable subsoil barriers that hold the water back and cut these with artificial outlets. Where the water comes chiefly from canal seepage it is usually more efficient and economical to ascertain just where, in the canal system, these seepage losses occur and then either line the canal to prevent seepage or install a drain to intercept the seepage and prevent the water-logging of the irrigated land by excessive subirrigation. In many irrigated districts the water-carrying capacity of the subsoil is adequate to permit the outflow, to natural drainage channels, of all of the excess water that percolates through the root zone of the irrigated fields. In such situations, if the canal losses can be intercepted, no further drainage is necessary.

Subsoil Permeability Important

The importance of subsoil permeability in relation to the alkali problem becomes apparent when it is realized fully that with irrigation the root zone must be leached and that with a saturated or impermeable subsoil it is not possible to leach the root zone. In fact when the subsoil is saturated, a process which is the reverse of leaching sets in. The solution that accumulates in a saturated subsoil is more salty than the irrigation water. With the progress of time it becomes still more salty as it gives up water to crop plants and loses water by evaporation. Furthermore, a saturated subsoil is an effective barrier to the downward movement of irrigation water through the soil, so that any additional salt brought in by irrigation water is added to the soil solution at any spot where the subsoil is saturated. Thus a field or a spot in a field where the subsoil is saturated soon becomes too salty to support normal crop growth and in the ordinary course of irrigation the soil of the root zone may also become saturated or water-logged.

Impermeable Soil To Be Avoided

It is a natural assumption that where land is regarded as irrigable, the surface soil that is to constitute the root zone for crop plants will be sufficiently permeable to permit the ready penetration of irrigation water.

As a matter of fact, the attempt is often made to grow crops on land where the surface soil absorbs water very slowly and where in consequence the root zone is shallow and because of its impermeability it can not be leached. Such land may have good surface topography and be easy to prepare for irrigation. It is ultimately disappointing, however, and the experienced irrigation farmer avoids it. Spots of such impermeable soil often occur in fields where most of the soil is good.

The condition of soil impermeability here referred to constitutes a phase of the alkali problem somewhat different from that associated with an impermeable subsoil. The condition itself is due to certain physical properties of the soil, which in turn are the result of its chemical composition. The chemical composition of the soil at any time is the result of reactions of base exchange that normally take place between the soil material and the salts contained in the soil solution.

When the salts contained in the soil solution are preponderantly salts of sodium, the reaction tendency is in the direction of an exchange by which sodium from the soil solution enters into combination with the soil and an equivalent quantity of some other base, usually calcium, passes from combination with the soil into the soil solution. A soil that has thus absorbed an appreciable quantity of sodium, properly designated an alkaline soil, becomes relatively impermeable to the movement of water through it.

Causes of Impermeability

On the other hand, a soil in which the replaceable bases are chiefly calcium and magnesium manifests those physical properties that are associated with friability and the ready penetration of water. When a soil solution becomes concentrated with sodium salts, the soil becomes alkaline as a result of reactions of base exchange. In this condition it tends to become impermeable to the movement of water whenever the concentration of its solution is reduced as a result of leaching.

An impermeable soil may occur as the result of conditions existing independently of irrigation. Many examples of such soil are found in the arid regions. On the other hand, a soil that is naturally friable and permeable to water may become impermeable as a result of irrigation if the conditions of irrigation are such that alkali salts (the salts of sodium) are allowed to accumulate in the soil solution. Such accumulation can be prevented by a system of irrigation and of drainage that insures a periodical leaching of the root zone.

CARL S. SCOFIELD.

APPLE Trees Attacked by Cedar Rust

The three native crab apples of the eastern half of the United States have been known for many years to be attacked by one of the true rust fungi which forms orange-yellow swollen spots on the leaves. This rust was classified and named in 1859 and has been well known to students of fungi since that time and has been found widely distributed from the Great Plains eastward.

The common Virginia red cedar, *Juniperus virginiana*, occurring mainly east of the Great Plains area, but also extending from New Brunswick to British Columbia on the north and to Texas, New Mexico, and Arizona on the south, has also long been known to be attacked east of the Great Plains by a fungus which forms little brown galls mostly varying from one-fourth of an inch to an inch or more in diameter. This was also given a name by the early mycologists and classified as belonging to another group of the rusts.

About 1865 the remarkable discovery was made in Europe that the common wheat-rust fungus and the cluster-cup fungus of the barberry were alternate generations of the same organism. The barberry fungus was found not to propagate on the barberry but could only reproduce when its spores were sown on suitable wheat plants on which it produced the common wheat rust. The term "heterocism" was coined to designate this method of fungus propagation.

FIG. 9.—Cedar rust gall in the red cedar with gelatinous orange spore masses fully expanded by rain Maryland, near Washington, D. C., April 27, 1926

The principle of heterocism opened up a new field in the study of the rusts and was followed by the discovery in Europe that some of the orange rusts on pomaceous fruits were alternate generations of rusts on the junipers. Between 1886 and 1888 a number of American species of orange rusts on the pome family were proved to be alternate forms of rusts on the junipers, including the common orange rust of native American crab apples and the cultivated apple and Siberian crab apple.

The cultivated apple introduced from Europe was grown in Virginia alongside the red cedars and perhaps crab apples for nearly 300 years without anything serious happening, and there was the same experience during the last hundred years in the upper Mississippi Valley. Occasionally an apple tree was found with a few spots of the orange rust on its leaves, and in Virginia the Pryor Red variety was very severely attacked. The writer saw this variety severely attacked by this rust and defoliated in the late nineties and was informed by older fruit growers that it had been so attacked for some 20 years or more. Pryor Red, however, was not an important commercial variety. Except on Pryor Red and a few localized attacks on other apples the disease was not abundant enough to be of economic importance at the beginning of this century.

Attacked Wealthy Apple in 1905–6

In 1905 and 1906, however, this fungus attacked the Wealthy apple in Iowa and Nebraska so as to attract attention as an economic disease. In the summer of 1908 localized outbreaks began to occur in the vicinity of Winchester, Va., and the writer made a personal examination of three small colonies involving a few hundred trees of the York Imperial. That same year reports came of its increase in the Appalachian fruit belt. The York Imperial is the leading commercial variety in this entire district. Since 1908 the disease has increased east of the Alleghanies from New York to North Carolina, and attacked the cultivated apples so severely as to become a major economic disease. It has also increased in many other sections of the eastern United States. Attacks on the York Imperial were followed by its spread to other varieties—Jonathan and Rome Beauty; later Ben Davis, Yellow Newtown, and other sorts were severely attacked. The Grimes Golden and the Winesap group appeared immune at first but the Grimes Golden has been severely attacked and localized attacks on the Winesap and Mammoth Black Twig have begun.

In 1912 the disease destroyed the fruit crop in many blocks of trees in Virginia and adjacent States. That season a few enterprising orchardists in the neighborhood of Winchester, Va., had cut down the red cedars around their apple orchards, and the result was a striking demonstration of the efficiency of this method of control.

In 1914 the disease had become so severe that in the Winchester, Va., district alone it was estimated that it destroyed 100,000 barrels of apples, reducing production estimated at 500,000 to 400,000. As a result, recommendations of the Department of Agriculture and of several of the State experiment stations for eradicating the red cedars began to be carried out. Virginia passed a special cedar-rust law in 1914, West Virginia having passed a similar law the year before, and other States have followed. Whatever theory or explanation may be advanced, the facts are that this fungus gradually attacked one variety after another with increasing severity. Since localized infections have already begun on the Winesap group and other varieties previously resistant, it is doubtful whether any variety of apple can be counted on as resistant to this disease.

The Life Cycle of the Cedar Rust

Beginning with the little brown galls on the cedar trees in early spring, these begin to exude their orange-colored gelatinous spore masses and form their secondary spores or sporidia on the first rain after the apples reach the pink-bud stage. They continue to throw off sporidia each rainy spell for about six weeks. These sporidia can not attack the red cedar but can grow only on the apple and its relatives. They can attack only young, newly formed leaves within a few days after they are expanded. They are very light and minute and are easily blown in all directions by the wind, but in general the quantity reaching any given number of apple leaves varies inversely as the square of the distance. The nearest infected cedar trees are, of course, the most dangerous. Those twice as far away are about one-fourth as dangerous but increase in the number of trees and the amount of infection may compensate for greater distance. After a fungous thread-forming spore succeeds in entering an apple leaf it produces a visible orange-colored thickened spot. This spot grows to about one-eighth or one-fourth of an inch in diameter and about the middle of July forms fringed cluster cups on the under surface, each crop filled with the summer spores of this fungus.

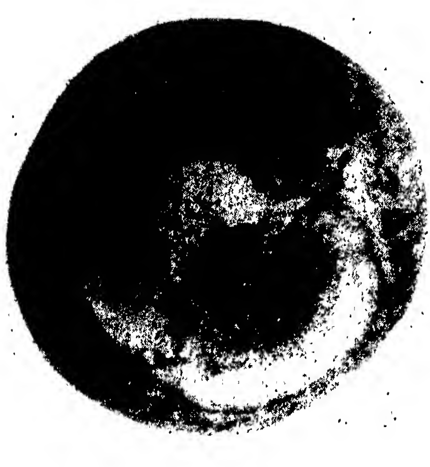

FIG. 10.—Mature Smokehouse apple from Pennsylvania carrying orange-colored diseased cedar-rust spot. The fungus as usual is only partially fruitful on this apple spot

Leaves carrying a few spots may live through the season and function, but when heavily infested they turn yellow and fall to the ground in midsummer. The fruit on heavily infested trees stops growing, is poorly colored and often less than half normal size. The fruit itself is sometimes attacked, especially near the calyx end, a similar but larger orange-colored spot being produced. Young tender twigs of some varieties are also occasionally attacked. The cluster-cup spores from the apple leaves mature in July and early August. They can not attack the apple, but can only germinate and enter the young, tender leaves and twigs of the red cedar trees. These summer infections on the red cedars remain dormant and invisible through the summer, fall, and following winter.

Grows Through Tissues

When the infected cedars start to grow the next spring the fungus grows through the tissues and the gall forms and grows with the tree. These galls, made up of a mixture of the host and the fungus,

reach practically full size by fall, and pass through the second winter in this condition. They reach full maturity and exude their spore masses the following spring and then die, thus completing the two-year cycle. The fungus, therefore, spends 2 to 4 months of late spring and summer on the leaves or perhaps the fruit of the apple, and about 21 to 22 months on the red cedar, the first winter as an invisible dormant infection, the second winter as a full-grown gall.

It should be noted that there are three living plants necessary for this cycle—the red cedar, the apple or its relatives, and the cedar-rust fungus. Without the presence of the cedar-rust fungus, red cedars and apples grow harmlessly together, neither endangering the other. However, when the cedar-rust fungus is present the red cedar becomes a pest tree to the apple orchards; and, on the other hand, the diseased apple tree serves to infect the red cedar.

Two other related species of cedar-rust fungi attack the apple in the eastern United States. Both are unimportant as apple pests as they occur only occasionally. One of these, however, also attacks the cultivated quince, producing an orange rust of economic importance.

Control Measures

Efforts to control this disease by spraying have proved futile. Spraying has reduced the attacks of the fungus in some cases but the rapidity of the development of the new leaves and the repeated infections that occur are probably the explanation of the failure of spraying. It should be noted that cedar rust has spread in Virginia and West Virginia orchards that were annually successfully sprayed for apple scab, leaf spot, and other fungous diseases. On the other hand, efforts to control the disease by cutting down the red cedars have been uniformly successful just in proportion to the thoroughness of the cedar eradication and the distance. At first, during 1912 and 1914 good results were obtained in Virginia by cutting the cedars within half a mile of the apple orchard. Later, it was found necessary to cut the cedars within 1 or 2 miles and finally as infection increased even the 2-mile distance has been found unsatisfactory where hillsides and mountain sides were found covered with large bodies of cedars. Ordinarily a distance of 2 to 4 miles may be regarded as satisfactory, with the latter distance as probably the only safe one.

Since it is only infected cedars which transmit this disease, and since the large spored form of fungus apparently is not blown by the wind as readily from the apple onto the cedar as the sporidia from the cedar to the apple, it is probably important where a large quantity of cedars at a considerable distance can not be removed, to keep the apples away from them. In other words, a large group of cedars may receive their rust infection from a few apple trees near them and then deliver the wind-blown spores in vast quantities to distant apple orchards. Without the few near-by apple trees they would remain uninfested or little infested.

In view of the above facts the biological conditions call for the following procedures: (1) The eradication of the red cedar in the vicinity of apple orchards wherever the cedar-rust fungus is pres-

ent; (2) the abandonment of the planting of red cedars in the vicinity of apple orchards in the eastern United States and perhaps elsewhere in the country; (3) the substitution of other species of conifers of somewhat similar appearance for ornamental, park, and roadside trees; and (4) the segregation of red cedar plantings for forest or other purposes into districts where apples are not grown and preferably where apples and crab apples are eradicated and with a zone of 4 or 5 miles surrounding the forest area where neither host plant is permitted to grow.

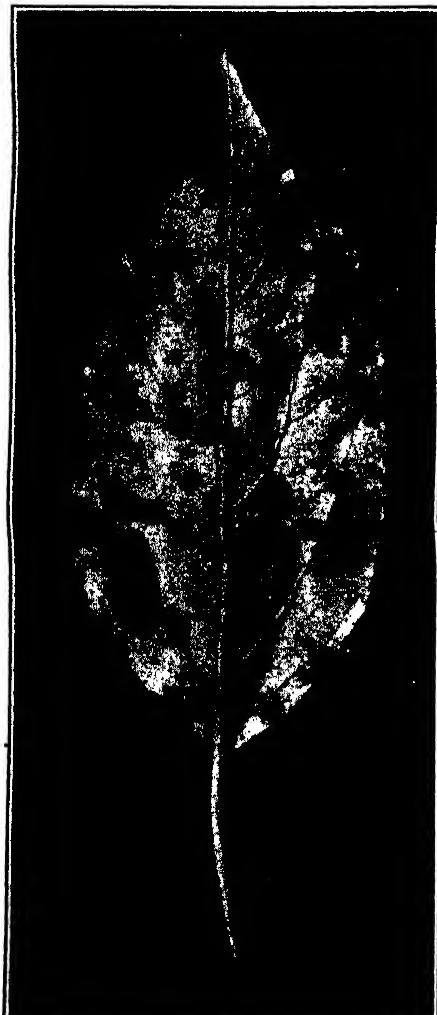

FIG. 11.—Cedar rust on underside of apple leaf (Wealthy) from Minnesota, showing the condition in September, the rust fungus fully developed and most of the spores shed

Possibly also quarantine action may be necessary in preventing the shipment and planting of red cedars. Certainly red cedars from cedar-rust infested territory should not be shipped into districts west of its natural range, that is, west of the Great Plains. Certain details in connection with the handling of these matters may be mentioned. The presence of the cedar-rust fungus on cedar trees from infested districts is not determinable when there are dormant infections. It is not easy to find moderate infection of the mature galls on account of the density of the tops. There is no likelihood of the disease ever being transmitted from dormant nursery trees of the apple, as it is only the summer form that occurs on this host. In eradicating the red cedar trees those over 3 or 4 inches in diameter may be simply cut down and the stumps will die, but trees of smaller size usually sprout and the young sprouts are more susceptible to the disease than the mature growth. All young trees, therefore, should be either pulled up or grubbed below the ground line. Many cedar trees occur in hardwood thickets. The best time to find them, therefore, is in the winter, when the leaves are off, especially when there is a light covering of snow on the ground. When the cedars are cut in the fall or winter the galls die, but when cut in March or April so that the tops

remain green and the galls fresh they may exude their spore masses from the fallen trees. All tops, therefore, should be burned on trees cut after February.

M. B. WAITE.

APPLE Picking at the Right Time The time of picking apples is extremely important in determining the storage quality of the fruit. Removing the fruit while in an immature condition will give a product that is very susceptible to wilting in storage; that is, susceptible to storage scald, and which is of poor dessert quality. On the other hand, allowing the fruit to remain on the tree too long may result in the fruit becoming ripe and mealy relatively early in storage. Heavy loss from dropping may also result from delaying picking too long.

There is no one test which, taken alone, is entirely satisfactory for determining the time of picking apples. The ripening process is a combination of many changes going on in the fruit and no one change is entirely satisfactory for determining when to pick the fruit.

The tightness with which the fruit is holding on the tree is one of the most dependable tests for time of picking. Most varieties should not be picked before the fruit is in such condition that the stem separates from the spur very easily. The fruit should generally separate from the spur when lifted and given a slight twist, or when the stem is turned at right angles to the spur. Most varieties when ready to pick may be harvested with very little breaking of the spurs.

The ground color, or color of the unblushed portion of the fruit, is also an excellent index to the condition of the fruit, especially red varieties. In practically all red varieties the unblushed portion should have a distinct yellow cast when the fruit is ready to pick. The Department of Agriculture has prepared a color chart showing the change from green to yellow-green color through which apples pass prior to proper picking condition. This yellowing of the unblushed portion of the fruit is one of the most dependable tests for time of picking many varieties.

Flesh Firmness a Good Test

A third test of much value in determining the proper picking condition is the firmness of the flesh. As the fruit ripens it softens and this softening can now be measured by a mechanical tester, somewhat similar in principle to a tire gage. This is particularly valuable as an indication of when certain varieties are becoming too ripe on the tree to be good storage fruit.

The number of days which have elapsed after the time of blooming is also a rough indication of the picking condition of the fruit. In general, different varieties have a fairly definite interval of time between the date of full bloom and the picking date. An early blooming season usually indicates an early harvest and late blooming is generally followed by a late harvest.

The color of the seeds and amount of red color on the fruit are not of much value in determining the time of picking of winter apples. No chemical test has been found that is of any real value.

The manner in which the fruit is adhering to the tree, the degree of yellowing in the ground color, and the firmness of the flesh appear to be the most dependable indexes to picking condition. A recent Department Bulletin discussed in detail the proper time of picking most of the important commercial varieties.

J. R. MAGNESS.

ASEPSIS for Plants from Abroad The dangers attending the introduction of plants from foreign countries have in recent years become so painfully apparent that it has led to the erection of numerous quarantine barriers and even raised the question as to whether the benefits from such introductions are commensurate with the risks involved. There are many weighty reasons, however, for continuing a guarded interchange of plant material between different parts of the world. The plant breeder, in particular, has a vital need for new introductions, especially for the wild relatives of cultivated plants. It thus becomes essential to work out an improved technique for the care of importations, and an excellent start has been made in connection with the handling of citrus plants introduced from the Old World. The occurrence of citrus canker, an insidious bacterial disease the eradication of which in the Gulf States in recent years has cost several million dollars, made necessary special precautions in handling citrus material, precautions which appear easily adaptable to other bud-propagated plants.

The first step is the construction of an insect-proof propagation house, with specially designed ventilator screens and oil moats to prevent the entrance of insects, as well as to see that no insects introduced with the plants are allowed to escape. This is vitally important, since insects are often the active spreaders of disease. The second step is the adoption of a system of "aseptic" plant propagation. This involves as a matter of routine the disinfection of clothes, tools, and person on each visit to the house; but the new feature evolved for citrus propagation is the double transfer of buds from all original plants. As received from abroad all plants are disinfected by fumigation or otherwise and placed in a metal "knockdown" screened cage (fig. 12) where they are held until new growth is made suitable to use as bud wood. If this new growth is entirely free from infection or infestation, buds are taken and inserted, by budding or grafting, on vigorous home-grown stocks held for that purpose in the "isolation ward" of the quarantine greenhouse.

Original Plant is Destroyed

As soon as these new buds are safely established and growing, the original plant, with any adhering soil, is placed in a covered container (fig. 12), transferred to a furnace and completely destroyed. The screened cage, readily taken apart, is sterilized with live steam or dry heat before being used again. When the budded plant has made sufficient growth, butts are taken from it—a second transfer—and inserted on new, clean stocks. If these second budded plants prove to be free from infection, they are admitted to the propagation

bench of the main quarantine house; but before being sent out for field trial they must still be subjected to a lengthy period of detention and rigid inspection. No plant that has not an absolutely clean bill of health is ever released from the quarantine house.

FIG. 12.—Section of "isolation ward," United States Citrus Detention Station (plant-quarantine greenhouse), Bethesda, Md., showing all-metal "knock down" plant cages for handling separate importations, each cage surrounded by oil moat. Attendant is about to consign original plant to metal container for final destruction by fire after buds from it have been established on new stocks. Note jar of mercuric chloride solution (1 to 1,000) for sterilizing tools, hands, etc.; also attendant's one-piece suit, which may be sterilized frequently. Plants in wire-screened cages may be watered and inspected without opening doors

The aim of this procedure is to make certain that no portion — root, branch, bark, or bud—of the original imported plant is ever released from quarantine. Only new, clean plants, "regenerated" by bud transfers, come forth after this vigorous regimen. As a result of this special equipment and procedure, the citrus-quarantine greenhouse, instead of being a sort of plant "pest house," as it might easily become, is as nearly absolutely clean in a horticultural sense as it is humanly possible to make it. No system, of course, is proof against personal carelessness and ignorance, and success in such work presupposes intelligent management. So far as the expense of insect-proofing the house is concerned, it has been found that the added thrift of the plants, freed from insect depredation, more than offsets the cost and trouble of installing the necessary equipment. And as modern medicine has developed a system of aseptic surgery, so must modern horticulture recognize aseptic propagation, in a liberal sense, as possible and vitally necessary in dealing with imported plants.

WALTER T. SWINGLE.
T. RALPH ROBINSON.

BAMBOO Groves Thrive in the United States The timber bamboo is a giant grass native of the warmer temperate regions of China and Japan. It was first introduced by the United States Department of Agriculture 25 years ago. Previous introductions in a limited way had been made earlier by private agencies, but the records in these cases are not clear.

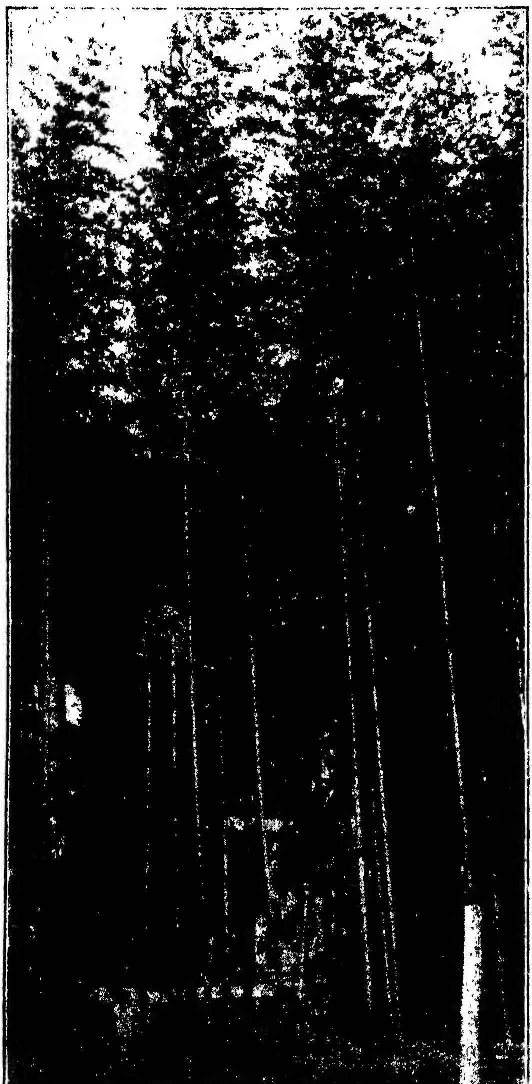

FIG. 13.—The timber bamboo as grown at the plant introduction garden, Savannah, Ga., providing a wonderful shade in summer and protection in winter

More than 400 species of bamboos have been reported throughout the world, but only 2 of these are native to the United States. They constitute the so-called canebrakes of our Southern States. There is probably no other group of plants so widely and generally used as this family of giant grasses. It is estimated that half a billion people are dependent on them in one way or another.

The timber bamboo in its young stage resembles many of our common grasses; the leaves are long and narrow and the canes or stalks are greenish, but quite hard. Like some grasses, the timber bamboo is provided with creeping underground stems or rhizomes which spread from the parent plant in all directions. New eyes or buds develop on these underground parts and these give rise to new plants. With each passing year the timber bamboo spreads and the stems and underground parts become larger and grow stronger. Age is a prerequisite for a successful timber-bamboo grove. It is not a quick crop like corn, wheat,

and many other grasses. It is essentially a forestry crop. Eventually, when a grove is fully established, magnificent stems shoot up to a height of 60 to 70 feet, furnishing poles 4 to 5 inches in diameter at the base and tapering gradually to the tip, where they may be 1 to 1½ inches in diameter. The stems are hollow, but are divided by frequent cross partitions at the joints. The plants have the remarkable faculty of reaching their full size in a very short time, usually in two to four weeks, depending on the age of the parents. The new shoot suddenly bursts through the ground in the spring and then grows a foot or more a day. As the cane shoots skyward, the leaves, branches, and branchlets unfold, producing a most striking and beautiful effect. There is a majesty and grandeur to these plants that makes a strong appeal to the imagination. After attaining full size, the plants may require three to five years to fully harden and ripen.

FIG. 14.—The timber bamboo Inside the Savannah grove with the cool and quietness of a great cathedral. Note the part of porch made of bamboo stems

Uses of the Timber Bamboo

Aside from the use of the timber bamboo as a beautiful evergreen ornamental, furnishing both grateful shade in summer and protection against cold, raw winds and storms in winter, it provides material for a multitude of uses on the farm and in the farm home; also in the marts of trade. Light fences, fence

posts, trellises of many kinds, water-carrying pipes, baskets, crates, chicken coops, poultry yards and houses, and light ladders, all may easily be constructed from the mature canes. Commercial uses are also numerous, including furniture making, fish rods, phonograph needles, canes and poles for many uses in commerce, such as curtain and rug rods, flower stakes, tree props, fruit poles, and many other purposes.

The timber bamboo is adapted to a wide range in this country. It will thrive through practically all the Cotton States of the South and in the warmer moist valleys of California and the Pacific Coast States. The largest and most successful grove (figs. 13 and 14) is located near Savannah, Ga., where it has survived the winters for more than 35 years. Away from the coast country, where temperatures fall as low as 10° or 15° F. it is likely to be injured by frost.

Bamboos are of such recent introduction into this country that as yet small plants of the timber species are not available in the trade. They can not be imported on account of the risk of introducing dangerous pests of various kinds. The department, in order to encourage the planting of groves, has been furnishing plants in a limited way for several years. The plants are furnished to cooperators who are willing to put out from one-eighth to 1 acre and to care for the groves until established. The timber bamboo can not be grown from seed; hence propagation must be carried on by means of the rhizomes. These are taken from young plants in spring and set in beds. By the following year the plants from the rhizomes have usually made a good growth. It is best, however, to leave them for a second year. They may then be transplanted to a small nursery and held another year, or set directly in the field 10 by 10 or 10 by 12 feet apart.

Careful Attention Needed

For the first two or three years the plants must be carefully tended and all weeds kept down by cultivation or hand hoeing. In good soil the plants soon begin to make runners and it is not long before the entire space is filled. The timber bamboo thrives best on well-drained deep soil. Good cotton or corn land should produce good bamboo. The crop should not be planted on wet or overflowed lands.

B. T. Galloway.

BALANCING the Production of Agriculture

There are two important aspects to the problem of balancing the agricultural output of the Nation. One aspect of this problem deals with the matter of having the right quantities of corn, wheat, potatoes, cotton, beef, and other agricultural products so as to avoid undue shortages and surpluses of particular commodities. This is a problem of balance within the agricultural industry itself.

A second problem of balance has to do with the maintenance of the right proportion between our national agricultural output and our manufacturing and industrial output. Here the problem is one of utilizing our human and other resources in such a way that farmers will be able to maintain on their farms standards of living

comparable with those maintained by people of similar training and ability in alternative occupations.

It is recognized at the outset that an accurate adjustment of our output of corn, wheat, beef, etc., can not be attained at any given time because of large fluctuations in production from year to year. Fluctuations in demand, though much less than fluctuations in production, also present an important difficulty.

The best that can be hoped for is to adjust acreage and size of producing herds and flocks in such manner that with normal yields the right quantities of the various products will be produced.

Assuming that it is possible to make these adjustments of acreage, herds, and flocks, is there danger of so restricting production as to make prices abnormally high? The answer to this question must be "No." If prices are high relative to production costs the farmer's incentive is to increase production, for thereby he can increase his income.

Intelligent discussion of the problem requires separate considera-tion of the major crops—cotton, corn, wheat, oats, and hay—and the minor crops. Each of these major crops occupies 35,000,000 or more acres of land in this country. No other crop occupies as much as 9,000,000 acres. The principles involved in adjusting the acreage of the major and minor crops are fundamentally different. In some localities certain of the minor crops are major crops locally. In such cases what is said of major crops below applies to them.

The Minor Crops

Farmers are in the habit of adjusting the acreage of all their minor crops. To show why this is easily done let us consider the potato crop. Ordinarily it occupies about 3,500,000 acres of land. A 10 per cent reduction of the acreage means 350,000 acres of land available for some other crop. If corn is grown on it, this means an increase in the corn acreage of less than one-half of 1 per cent. This exchange of area might double or treble the price of potatoes and at the same time have a negligible effect on the price of corn.

The reason why the most satisfactory possible adjustment of the acreage of minor crops has not been accomplished in the past is that at planting time farmers have not known how much increase in acreage is permissible or how much decrease is desirable. They have been guided almost entirely by the price at planting time.

To bring about the adjustment all that is necessary is for every grower of a minor crop to know at planting time how much increase or decrease in the acreage of the crop is necessary to bring about the adjustment.

This information is now furnished the grower in the outlook report of the department, which is published early in February each year. Another reading on it is given in the intentions report, which is published annually the latter part of March.

There is evidence in the case of some of the minor crops that this information has in the last year or two had an important influence in governing acreage planted. It is desirable, however, to perfect better organization for the purpose of getting this information to farmers. This is being attempted by representatives of the department and of the various State agricultural institutions.

Adjustment of the acreage of the major crops is a different problem. During the war high prices and the urgency of the situation for greater production of food led to an enormous extension of all the major crops, which resulted in bringing a large area of new land into cultivation. So long as the war lasted there was a market for the products at good prices. Shortly after the war a crash in prices came, and since that time we have been producing more of all the major crops than could be sold at a reasonable profit.

Major Crop Acreage Excession

The difficulty arises from the fact that the acreage of all of the major crops is excessive, and there are no other crops which the farmer can substitute for them profitably.

According to the census there was a reduction of 19,000,000 acres in harvested crop area between 1919 and 1924. It is not known exactly how much further reduction would be necessary to make production of the major crops fairly profitable. This can be done only by the abandonment of land now in cultivation.

The abandonment of land can hardly continue until the acreage of the major crops is sufficiently reduced to make their cultivation profitable for the reason that many million acres of land are now idle and ready to come back into cultivation as soon as it is profitable to cultivate them. It appears, therefore, that under present conditions a permanent rise in the price of the major crop products to an average level of satisfactory profit to the producer is not to be expected within the near future.

The problem of balancing the output of beef and dairy products is similar to that of the major crops; of the remaining livestock products to that of the minor crops.

W. J. Spillman.

BARBERRY Eradication in Wheat Areas

The common barberry was brought from Europe to New England by early colonists. From there pioneers carried this shrub westward to New York, Pennsylvania, and the Ohio and upper Mississippi Valleys, and finally over the Rockies. The plant was used for ornament and hedges, the berries for jelly, and the yellow roots for dyestuff.

New England farmers realized very early that grain grown near common barberries usually was blasted. As a result, laws prohibiting the growth of common barberries were passed in Connecticut in 1726, in Rhode Island in 1766, and in Massachusetts in 1775. Similar laws became effective in parts of Germany and France during the period from 1805 to 1888, and in Denmark in 1903.

Relation to Stem Rust of Grains

Experimental proof of the connection between black stem rust of cereals and the rust of barberry was made by DeBary in 1865. He actually produced infection of small grain by placing on their leaves the rust found on the leaves of common barberry. Similar experiments have been repeated many times in both Europe and America, confirming these results.

Severe stem-rust losses have occurred frequently in various local areas. Some farmers and some localities and even whole districts have abandoned wheat growing because of repeated attacks of stem rust. As early as 1890, county-wide epidemics had come to the notice of agriculturists. More severe and more widespread epidemics occasionally were reported. In 1904 occurred an epidemic so severe and so widespread that it became of national importance.

Again, in 1916, a still more severe epidemic occurred. Because of the emergency need for wheat brought about by the World War, this one became of world-wide importance. The loss to spring wheat alone in the United States was estimated at 180,000,000 bushels. Some injury was reported to winter wheat, oats, barley, and rye. Reports from Canada estimated the loss of spring wheat in the prairie Provinces at over 100,000,000 bushels. In the years since the annual losses have varied. However, the average annual loss caused by stem rust in the 10-year period 1916 to 1925, inclusive, is estimated at more than 50,000,000 bushels of all grains.

The Barberry Eradication Campaign

The destructive epidemic of 1916 resulted in conferences followed by legislation and action to control stem rust. In 1917 North Dakota, which had suffered such severe losses in 1916, began the eradication of her common barberries. Early in 1918 the United States Department of Agriculture, in cooperation with the 13 North Central States, including Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming, organized and began a campaign for the eradication of all common barberries from these States. This campaign has been continued from that time with excellent accomplishments. The several phases of the campaign include research, education, survey, and eradication.

The investigations include the study of (1) the time of appearance of stem rust on the barberries and on grain each spring, (2) the rate and extent of the spread of stem rust each year, (3) the severity of local and wider epidemics and the resulting loss, and (4) the characteristics and rust susceptibility of various species, varieties, and hybrids of barberries that may be distributed in the United States.

The public must be kept informed of the purpose and progress of the campaign in order that the cooperation of all present and future property owners and occupants may be obtained and maintained. Adults and children are instructed through newspaper and magazine articles, bulletins, circulars, postcards, posters, lantern slides, motion pictures, demonstrations, and direct instruction in public schools. An organization of business men and agricultural leaders, called the "Conference for the Prevention of Grain Rust," with headquarters in Minneapolis, has been most helpful in the publicity campaign.

Surveys

The first survey was made to locate and destroy all planted and near-by escaped bushes. This survey is almost completed. It was designed to eradicate the largest number of bushes, especially fruit-

ing bushes, in the shortest possible time and thus reduce the danger of severe epidemics.

Resurveys for seedlings and sprouts are made on all properties upon which barberries have been found. These resurveys follow the other surveys at intervals of two to four years. Seedlings have continued to appear in a few areas for eight years after all fruiting bushes were killed.

A second complete survey now is in progress to locate and destroy any bushes missed in the first survey, any that have developed since from sprouts or seedlings, and those escaped bushes grown from seeds which birds have scattered in the more remote areas of the farms and woodlands.

FIG. 15.—Escaped barberries growing in a wooded pasture. Birds often carry barberry seeds for miles before dropping them. As a result, thousands of wooded areas must be cleared of escaped bushes

The common barberry was widely planted as an ornamental and useful plant in cities and towns and on farms. Birds have scattered the seeds widely in groves and orchards, along fence rows, in brushy pastures, in thickets, along streams, and in woodlands of every type. Bushes have been found in the crevices of precipitous cliffs, in abandoned stone quarries, in the middle of great clumps of wild currants and gooseberries and visible only from above, in dense thickets of wild plums, under tangled arbors of clematis, wild grapes, and poison ivy, on the steep banks of mountain torrents, among second-growth timber of northern cut-over lands, under the forest giants of river flood plains, in wet forests of cedar and balsam fir, in tamarack swamps, and even on a floating log. There seems to be no situation except deep water where the plant will not grow.

In these 13 North Central States were a few more than 900 counties requiring survey. More than 850 have had the first survey completed. The remaining 50 counties are located on the outer edges of the area. About 200 counties have been covered again in the second complete survey. This is more than two-ninths of the total number of counties. Although more counties have been completed in the second survey than remain undone in the first survey, the job is not yet half done. The area requiring resurvey at intervals constantly increases and the second survey is covering large areas of difficult woodland not touched in the first survey. However, many more than half the bushes are out. In the eight years of the campaign, to June 30, 1926, there have been found 6,506,825 original bushes, 5,340,302 seedlings, and 291,894 sprouting bushes. The total is 12,139,021 bushes. These bushes were found on 75,000 different properties. More than 20 per cent of the properties were found on resurvey to be infested again by sprouts and seedlings. Of these bushes found, 12,075,257 have been destroyed. About 8,000,000 have been dug or pulled. More than 4,000,000 have been killed with chemicals, mostly salt. The job required 1,170 tons of salt, 20,320 gallons of kerosene, and 1,056 gallons of sodium arsenite.

Educational Work Necessary

While survey and eradication progress there also is the job of telling the story of the common barberry and black stem rust to most of the more than 32,000,000 people in these States. In doing this the Department of Agriculture has furnished more than 2,095,000 pieces of printed matter, the Conference for the Prevention of Grain Rust has furnished over 2,785,500 pieces, and the cooperating States about 265,000 pieces, besides almost innumerable newspaper items and articles.

Tens of thousands of barberry plantings from which stem rust has spread in former years have been found and eradicated. The majority of all common barberries found since 1918 have been infected with stem rust. Hundreds of local stem-rust outbreaks have been traced directly to the infected common barberries. Many single barberry bushes have been known to spread destructive rust for more than 5 miles in all directions. Even small seedlings and sprouts infected early in the season have been proved responsible for the spread of rust to near-by fields of grain. The large number of these local rust spreads found indicates clearly that the inoculum for the more widespread epidemics comes from these numerous early local infections around infected common barberries. It is little wonder that stem-rust epidemics have occurred each year with millions of infected barberries scattered in many thousands of locations all through this grain-growing area. The wonder is that greater damage did not occur each year and that more farmers did not abandon grain production.

In the States east of the Mississippi the reduction of these local rust centers has so reduced stem rust that losses have become almost negligible, except near remaining barberries. In the group of States west of the Mississippi the number of local epidemics has been greatly reduced. The recurring general epidemics also seem to be much later

in developing and much less in severity and extent. This campaign of barberry eradication must and will continue until every barberry bush, seedling, and sprout has been found and eradicated from these grain-producing States.

F. E. Kempton.
L. D. Hutton.

BARK Beetles and Timber Conservation

Bark beetles are a highly specialized group of insects that may be found in the dying trees of any coniferous forest. They are represented by numerous species, none of which exceeds the ordinary house fly in size. Their importance is due to the fact that they feed and rear their broods in the layer of tissue between the bark and the wood of forest trees. This narrow ring of tissue, generally known as the cambium, is vital to the functions of the plant, and its destruction results in the death of the tree within a short period of time.

Fig. 16.—Yellow pine timber killed by the Black Hills beetle on the Kaibab National Forest

Relatively few species of bark beetles are able to attack and bring about the death of living, vigorous trees. Other species attack only the cambium of trees that are in a weakened or dying condition from other causes. Such species therefore are of small importance in the conservation of timber stands. Less than 10 of the species are known to have caused really serious losses of timber and their depredations occur mainly in the pine-growing regions of the Western and Southern States. These species belong to the genus Dendroctonus, and

because of their host trees they are commonly known as "pine beetles."

All of the important pine beetles now found in the United States are native insects and therefore do not present a problem in the same sense as an introduced pest such as the gipsy moth. These bark beetles long ago became established everywhere throughout the range of their host trees. The old mature trees of our present forests have grown up under conditions in which tree-killing beetles and uncontrolled fires were important factors.

FIG. 17.—Lodgepole pine killed by the mountain pine beetle in the Yosemite National Park

Natural Checks Exist

These insects do not entirely destroy the forests which compose their food supply because natural checks and balances limit their numbers. Unfavorable climatic conditions, insect enemies, diseases, birds, and the natural resistance to insect attack of vigorous trees all tend to produce a high mortality among the bark-beetle broods. Under normal conditions the quantity of timber killed by these insects does not exceed the yearly gain in volume due to tree growth. Thus the forest is maintained, as the loss is offset by increment.

At times, however, conditions arise which favor the insects. Natural checks fail to maintain the balance and bark beetles increase to the point where they kill timber much faster than it grows. Such outbreaks, usually known as "epidemics," have caused very heavy losses in valuable yellow-pine stands in California and Oregon. In Montana the lodgepole pine has been killed over vast areas by these insects to the extent that it will require a century to replace it by normal forest growth.

It is in the mature, reserve stands of pine, which for the next few decades will provide the most available supply of high-grade lumber, that the losses caused by bark beetles are now most evident. During certain seasons in some of the pine-producing regions of the Western

States the volume of timber killed by bark beetles has greatly exceeded that killed by fire. The value of pine stumpage killed by bark-beetle outbreaks has been estimated to average $15,000,000 annually.

Control methods have been devised which consist of searching out and cutting the infested trees, and then destroying the insect broods by burning or exposure to weather. When applied at the right time to epidemic conditions these methods materially reduce losses. Where timber values are high, the quantity of timber saved from destruction more than offsets the cost of the control work.

At present these control methods are the only practical means that have been found for the protection of our most valuable timber stands against bark-beetle losses. There is a real need for research work which will provide a better understanding of the natural factors that govern the increase and decrease of bark-beetle epidemics. Such studies should provide the foundation for improvement of control methods and the management of forest areas with the idea of preventing conditions that favor bark-beetle increase.

J. M. Miller.

BARLEY Varieties New to United States All of the many varieties of barley grown in America have been introduced from other countries. This introduction has come about in three ways and these ways correspond to three periods in our agriculture. When America was being settled immigrants brought their own seeds with them. Later State experiment stations and the United States Department of Agriculture were established for the assistance of the farmer. Although these agencies for the most part were not concerned with comprehensive efforts to obtain new things, they became a medium for testing and distributing them. Finally, within these agencies came an organized effort to procure and study plants from all parts of the world.

The varieties brought by the immigrants succeeded only where the new lands were favored with a climate similar to the section from which the farmers came. The Coast barley of the Western States and the six-rowed form grown in the Lake States 30 years ago came to us in this way. In later years Federal and State agencies have played an important part. The Manchuria and Oderbrucker barleys were distributed in the United States and Canada by State and provincial agencies. Club Mariout was sent to the Department of Agriculture from Egypt and is now an important barley in California. At one time an attempt was made to produce a higher grade of barley for malting. Svanhals and Hannchen were introduced during these activities and are now grown to some extent. Possibly the most successful of recent introductions was Trebi. This variety was selected from an importation coming from near the Black Sea. It is now almost the only barley grown on the irrigated lands of southern Idaho and is grown also in several neighboring States.

All Varieties Sought

At present there is an intensive effort to procure all possible varieties for observation, as it is not possible to tell in advance whether or not a variety will be successful. In 1923 and 1924 selections were made in the barley fields of Algeria, Mariout, and the irrigated lands

of Egypt, in northern Africa; of Kashmir, in northern India; and of Abyssinia, in eastern Africa. These selections have been grown in the United States for two years, but their value has not yet been determined. The climate of northern Africa is similar to that of the Western States, and many of the strains should give high yields in the West. Varieties not superior in themselves may possess qualities which are of great importance in crossing. The inherent vigor which causes a variety to be markedly superior under a specific condition is potentially important in a parent.

HARRY V. HARLAN.

BEAN Wilt Traceable to Infected Seed "The seed is blamed for everything, but weather and soil conditions are the important things," said a seedsman to the writer some years ago. Was he right? Yes, and no. It is true that conditions must be favorable to any given infectious disease if it is to flourish and become epidemic, but the

FIG. 18.—Bean wilt (*Bact. flaccumfaciens*) on navy-bean plant from badly infected field

presence of the parasite is as necessary as the yeast in the making of bread.

In the case of seed-borne diseases it is the infected seed which causes the initial outbreak in the spring. From such centers of infection the disease will spread rapidly, given the conditions of soil and weather to which the seedsman referred.

Such is the story of bean wilt. In 1923, following a year of serious outbreaks of this disease in Michigan, the writer made a tour of the bean-growing centers of that State. Wherever seedling wilt was found examination was made of the remaining seed. Invariably the yellow infected beans were found. It chanced that in every

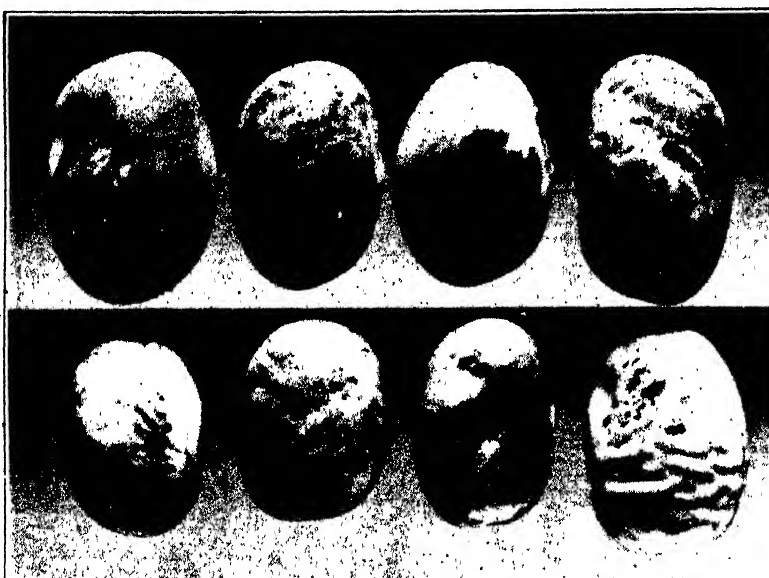

FIG. 19.—Navy-bean seeds infected with bacterial wilt. The darker areas seen in the photograph are in reality bright yellow, due to the bright-yellow bacterial mass which shows through the white seed coat. Magnified five times

case these fields were planted with a white-seeded variety on which the infection is most easily discernible.

A second tour of the same fields was made at harvest time, and in every case there were appreciable quantities of infected beans, although the conditions had not been favorable to the disease during the summer. Thus the cycle was complete. Wherever infected seed had been planted there was seedling wilt in June, spread of the disease through the summer, and infected beans in August.

So much vitality has this parasite that it remains alive in the seed and is still very infectious for at least five years.

Another sad part of the story is that the percentage of germination of infected seed is not very much lowered. Hence he who sows it reaps trouble.

FLORENCE HEDGES.

Beets of Primitive Type in Disease Control Authorities are in agreement that the cultivated forms of beet originated from the wild beets of the Mediterranean or western Asiatic region. The cultivated forms as we know them have been in use by man for centuries and no record exists as to how or when they came under cultivation. The intensive work of sugar-beet breeding of the last hundred years has consisted largely of selection work upon beets which trace back to a very few high sugar-producing lines.

Contrasted with the uniformity presented by the sugar beet as it exists to-day is the multitude of forms shown by the wild beet, commonly called *Beta maritima* L., but which most botanists now concede is properly included in the same species as the sugar beet, *B. vulgaris* L. These wild beets, while conforming in botanical characters to the species, exhibit great variation in leaf form, growth habit, coloration, and root character.

With the failure to find in cultivated lines of beets the characters desired it is logical to turn to the primitive types in search of these characters. The severe conditions imposed by the habitats occupied by this plant and the severity of parasitic disease attack have led, by natural selection, to the elimination of the less hardy forms and the predominance of adapted types. The hybridizations and the resultant recombinations of characters have produced an enormous variety of types among the wild beets.

Wild Beets Attacked by Rust

In nature, the wild beets were found by the writer to be attacked by the rust disease (*Uromyces betae* (Pers.) Tul.), root rot (*Phoma betae* (Oud.) Fr.), mosaic and leaf spot (*Cercospora beticola* Sacc.). The last named existed in epidemic form in many localities, and wild beets were found of all degrees of resistance, from apparent immunity to extreme susceptibility. Seed was selected from the most outstanding of these plants and the plants grown from this seed when subjected to further tests under severe disease conditions have shown the same relations to the leaf-spot fungus.

Similarly, certain of these wild forms have been exposed to the attacks of viruliferous leaf hoppers (*Eutettix tenella* Baker) to inoculate them with the curly-top disease of beets. In the case of curly top, no field selection was possible since this disease, so far as is known, does not exist in Europe and no natural selection has been going on. With most of the plants inoculated the effect of the curly-top virus was extremely severe. With certain wild forms, however, it was very evident that the disease produced only mild symptoms.

It has been demonstrated that, among wild beets, forms exist which are strikingly resistant to Cercospora leaf spot and which are tolerant of curly top. There is some promise that utilization of these forms may lead to development of resistant types with commercial possibilities. Introduction of these characters from the wild source seems necessary if we are to develop disease-resistant sugar beets, since commercial forms as now existing do not possess this character-

istic. In a test of 500 strains of sugar beets at Rocky Ford, Colo., in 1925, under epidemic conditions for Cercospora leaf spot, no commercial variety of beets possessed any marked resistance to the leaf-spot disease. Tests in 1926 with 638 strains of sugar-beet seed at Las Cruces, N. Mex., under epidemic conditions for curly top showed that the same situation exists with this disease.

Hybrids Show Resistance

The tests with sugar-beet strains which have arisen as a result of definite crosses of wild beets with sugar beets of high quality confirm the viewpoint expressed in this article. Certain selections of such hybrid origin show extremely high resistance to curly top when grown in field tests where curly-top infestation was practically 100 per cent.

Development work with a biennial plant such as the beet, which is subject to cross pollination, is of necessity slow. The commercial demands as to tonnage and sugar production are exacting. The introduction of the additional characters for disease resistance to leaf spot and curly top while maintaining present standards of quality presents to the plant breeder and plant pathologist formidable problems. The work carried on to date indicates that in certain wild forms we may have desirable breeding material.

G. H. Coons.

BEVERAGE Juices from Apples and Grapes Unfermented fruit juices are once more becoming popular as beverages in spite of the strong competition offered by a multitude of synthetic soft drinks. The kind of cider made from apples which are valueless for any other purpose is not gaining in popularity; the product which is finding wider consumption is one which is made by methods of manufacture which are carefully controlled and from materials which are selected with all the care that long training and experience can bring to bear on the task. In consequence present-day fruit beverages have attractive appearance and standardized quality, and are finding favor among consumers to whom the kind of cider which was "just apple juice" made no appeal. The Department of Agriculture has contributed materially to this improvement in beverage juices by work on several phases of the technology of juice manufacture as well as by studies of the raw material.

Very few of the cultivated varieties of grapes, still fewer of the varieties of apples ordinarily grown, make satisfactory beverage juices when a single variety alone is employed. This is for the reason that our dessert apples and grapes have been selected and propagated because of the agreeable flavor when eaten out of hand. The possession of such quality indicates that the juice of the fruit will be somewhat lacking in the tartness and sprightliness which is regarded as desirable in a beverage juice. In consequence, in order to make juices which appeal to most palates, it is necessary to modify the rather insipid juice which will be obtained from most dessert varieties of apples by the blending of the more acid and astringent culinary apples or crab apples.

Studies carried on in the department over a series of years have included analyses of more than 500 varieties of apples, including a large number of crab apples and other astringent apples, as well as practically all the important varieties to be found in commercial and home orchards. The possession of these data permits the manufacturer, by inspection of the analyses which he has available, to determine what mixture of varieties should be made in order to produce a blended cider of palatable character.

Improved Appearance of Cider

Other studies have had as their purpose the improvement of the appearance of bottled Pasteurized cider. Many people object to the cloudy, muddy appearance of the ordinarily Pasteurized cider and to the presence of the more or less abundant precipitate usually present after pasteurization. Detailed studies in which a great number of clarifying agents and aids to filtration were employed led to the development of a method of filtration, with the aid of purified infusorial earth, which gives a beautiful, permanently clear liquid with no modification in flavor and which does not become cloudy on being Pasteurized. This method of filtration can be applied to juice immediately after pressing from the fruit so that the whole process of preparation and Pasteurization in the final containers can be carried out in a few hours. It is thus much less laborious and costly than the older method of pressing, Pasteurizing and storing for settling, filtering, bottling, and Pasteurizing a second time.

Filtering Improves Taste

The studies of methods of Pasteurization carried on in the department have brought out very important facts in regard to the cooked or boiled taste so often complained of in ordinarily Pasteurized cider. It has been found that when juices immediately after pressing are filtered by the use of diatomaceous earth they may subsequently be heated to Pasteurizing temperature without the development of the modified or cooked apple taste. This is for the reason that the substances which undergo changes on heating resulting in the modification of flavor, are removed by filtration with diatomaceous earth so that the juice can be heated after filtration to ordinary Pasteurization temperature, or even much higher, without any injurious change.

As a result of the information acquired through these and other studies bearing upon the problems of fruit-juice manufacture the department is in position to advise fruit-juice makers as to the selection and blending of fruits and the processes of extraction, clarification, bottling, and filtration of their products.

J. S. CALDWELL.

BLACKBIRD Control in Grain Areas Damage to grain by blackbirds is most frequent along the border line of agriculture or where cultivated fields lie close to the marshes in which these naturally gregarious birds breed or roost. In recent years most of the complaints against blackbirds have come from the rice areas of the Gulf coast, Arkansas, and the Sacramento Valley, Calif., and the milo and barley fields of the Imperial Valley, Calif. Red-winged blackbirds have been the prin-

cipal offenders, but grackles, jackdaws, and the yellow-headed Brewer, and rusty blackbirds also have been destructive, especially when their numbers have been increased and concentrated during migration.

Ripening and mature crops, as well as the sprouting kernels, of rice, milo, corn, and oats are the chief grains attacked. In some localities entire fields of milo and rice have been so severely damaged by the birds that harvesting was unprofitable; and losses varying from 10 to 25 per cent over larger areas are not infrequent.

From those sections where for years farmers have had to combat blackbirds with firearms and less effective frightening devices, appeals for aid in a wholesale destruction of the birds have been increasing. To determine the practicability of such an undertaking has required much experimental field work and laboratory research.

Outstanding among the results obtained is the fact that during the ripening period or the harvest no extensive control measures can be

FIG. 20.—A rising cloud. Mixed flock of red-winged and yellow-headed blackbirds over milo field in Imperial Valley, Calif.

successfully and economically carried out. The abundance of highly acceptable food, together with the quickness of blackbirds to detect danger and to shun areas where some of their numbers have met misfortune, makes poisoning operations unreliable in summer and fall. No bait can be devised more attractive than the abundantly available crops upon which the birds have become accustomed to feed.

Poisoning operations are more successful in periods of comparative food scarcity, in winter and early in spring. Blackbirds can then be destroyed in considerable numbers, though not at a reasonable expenditure of money and effort. Moreover, careful analysis discloses that extensive poisoning at that time may not accomplish the desired purpose. In the rice fields of Louisiana and Texas, for example, the winter blackbird hosts are multiplied manyfold by the presence of northern breeding birds in those congenial climes. Wholesale destruction at this season would involve killing many northern migrants that do not seriously affect the local problem and that may even be useful to agriculture in their summer homes.

Even the resident birds that are to blame for most of the damage wander throughout the entire Gulf coast region, though the narrow strip in which a reduction of their numbers is desirable is limited to the southern border of the rice belt.

The wisest and most economical measures of relief involve local control for the region of principal blackbird damage through poisoning at sprouting time, to prevent excessive damage at that season; and the continued use of firearms during the ripening period and

FIG. 21.—What the blackbirds left. Heads of milo stripped of grain by redwings, Imperial Valley, Calif.

the harvest. In large fields the small-bore rifle fired from a shooting tower has proved to be more effective and economical than the shotgun.

E. R. KALMBACH.

BLACK Currant is Nurse of Blister Rust The European black currant is not extensively grown in the United States but is found to some extent in most sections where currants are cultivated. As its name indicates, it is of European origin. It is commonly called cultivated black currant. Under the conditions existing when it was first brought into the United States, this plant did no harm, but the introduction of white-pine blister rust has changed the situation.

White-pine blister rust is a fungous disease destructive to white (five-needled) pine trees. It can attack these trees only after it has undergone a period of development on the leaves of currant or gooseberry plants. This disease is comparatively new to North America. It was introduced from Europe on white-pine planting stock at various times between 1898 and 1910, and has become established in both the eastern and western portions of the United States.[1]

European black currant is a nurse plant for white-pine blister rust. So extremely susceptible is this species to the white-pine blister-rust disease, thereby favoring its rapid spread and establishment, that the United States Department of Agriculture recognizes the cultivated black currant as a distinct menace to the white-pine timber supply of the country. It is so serious a danger to the production of white-pine timber as to make this kind of currant a public nuisance in all States where white (five-needled) pines grow.

The department advises against the growing of this species of currant (*Ribes nigrum* L.) anywhere in the United States and recommends that State authorities, nurserymen, and growers take active steps to accomplish its prompt elimination from the Pacific, Rocky Mountain, Atlantic, Appalachian, Ohio Valley, upper Mississippi Valley, and Lake States. The growing of cultivated black currants, in home gardens as well as in nurseries and commercial plantings, should be entirely abandoned throughout these States, because of the great importance of the white pines and the relatively small value of the black currants.

The department, in cooperation with the infected States, has developed means for preventing blister-rust damage to white pines in a given tract or area. Such local control of the blister rust is feasible only in localities where pine values are sufficiently large to warrant the expense and labor of ridding the area of wild and cultivated currant and gooseberry bushes. This work must be done before the white-pine forests are severely attacked, hence it is important to apply general control measures to retard the spread of the blister rust into uninfected regions. The principal means of delaying its spread are through enforcing quarantines which regulate or entirely prevent the movement of the host plants of the blister rust, eradication of European black currants, regulated planting of other kinds of currants and of gooseberries, and sanitation of nurseries against the disease in order that only healthy pines shall be planted.

Blister Rust a Fungus

The blister rust is caused by a parasitic fungus which grows within the tissues of its host plants (five-needled pines, currants, and gooseberries). It saps the life of these plants. Currant and gooseberry bushes are defoliated by the rust when infection is severe, resulting in reduction of the yield of fruit. On white pines the disease first causes the death of twigs and finally kills the trees. It kills white pines of all ages and, unless controlled, prevents the growing of these trees in areas where currants and gooseberries are abundant.

The disease does not pass directly from pine to pine, but only from pine to currants or gooseberries. However, the rust spreads from

[1] The infected States on Sept. 1, 1926, include the New England States, New York, New Jersey, Pennsylvania, Michigan, Wisconsin, Minnesota, Washington, and Oregon.

one currant or gooseberry bush to another, causing the under side of the leaves to appear as if spotted with iron rust. The spores (reproductive bodies) of this currant-rust stage may retain their germinating power for several weeks. The spores from a diseased pine are also long-lived and may retain their power to infect currants or gooseberries for months.

There is still another and vitally important stage in blister-rust infection—the pine-infecting stage. A close knowledge of the life history of any plant pest usually discloses some point on which human intelligence can base control measures to reduce the damage caused by the pest and limit its spread. Thus our knowledge of the extreme susceptibility of European black currant to blister-rust infection is helpful in checking the rapid advance of the disease into uninfected regions. After the blister rust reaches the white-pine forests, local control of the disease rests upon the peculiarity of the pine-infecting stage of the rust.

Shortly after the rust has appeared on the leaves of currant and gooseberry bushes there is developed on the under surface of the infected leaves a feltlike mass of tiny hairs. These hairs produce blister-rust sporidia, or spores of exceedingly small size, which are so delicately formed that they retain their vitality for a comparatively brief period, and can infect a pine tree only under special conditions of humidity and temperature. Owing to the short life of the sporidia, white pines are infected only within a short radius of the diseased bushes. Even the extremely susceptible European black currants seldom spread infection to pines growing more than a mile from them.

Remedy is Demonstrated

It has been conclusively demonstrated during the past 10 years that under ordinary forest conditions in the eastern United States white-pine forests suffer no further appreciable damage from blister rust after all currant and gooseberry bushes are removed from the pine area and from a surrounding zone 900 feet in width. In addition, European black currants must be removed within at least 1 mile radius of the pines, and occasionally it is necessary to remove plantations containing large numbers of plants of the yellow and red flowering currants within the same radius. More facts are required before the exact width of the protective zone under western forest conditions can be definitely specified. However, there is no indication that it will vary greatly from the distance found effective for local control of the blister rust in the Eastern States.

White-pine blister rust attacks trees of any species belonging to the white-pine group. The white pines commonly have five needles within the sheath which envelops the base of a leaf cluster; hence are also known as five-leafed pines. Some of our most valuable American timber trees are menaced by the blister rust. Among these are the well-known white pine (*Pinus strobus*), widely distributed in the eastern and northern United States; sugar pine, (*P. lambertiana*) found in California and Oregon; and western white pine (*P. monticola*), which occurs in Montana, Idaho, Washington, Oregon, and California.

The future timber supply of the United States depends upon systematic forestry. No trees have more desirable qualities for

forestry purposes than the white pines. These species are readily reproduced, grow rapidly, and yield more in merchantable timber and in money value per acre than is common with other kinds of forest trees. The result is that forestry development in many States centers prominently around white pine, western white pine, and sugar pine as major species in forest management. All white-pine species have high ornamental value also and are planted as lawn trees and, to some extent, for windbreak and shelter-belt purposes.

The common history of white-pine blister rust since its introduction into the United States is that European black currants "catch" blister-rust infection in localities far from any infection center, causing the disease to advance by leaps and bounds. Many examples of such long-distance spread are recorded. In one instance cultivated black currant plants 110 miles from any white pines were infected. A careful investigation was made and all facts indicated clearly that the blister-rust spores causing this infection had been carried at least 110 miles by the wind. When it has thus reached a new point the rust soon completely covers the under surface of the foliage of all European black currants in the vicinity of the plant first infected. Other kinds of currants or gooseberries which grow close to the infected black currants may also show a small amount of the disease. Usually the disease is confined entirely to European black currants until near-by white pines become infected, after which all kinds of currant and gooseberry plants in the vicinity develop more or less rust.

Cultivated Black Currants Responsible

Cultivated black currants have been largely responsible for failure of the efforts to eradicate the blister rust, because the disease had spread long distances to black currants before the infected pine plantations were destroyed. They have been responsible for firmly establishing the blister rust in hundreds of square miles of white-pine forest which would have remained free from rust for many years if there had been no black currants present. Thousands of square miles of white-pine forests are still free from the rust, and if possible must be kept free.

Nurseries producing white pines or currants and gooseberries should distribute plants guaranteed to be free from white-pine blister rust. This can be done, but not while European black currants are growing in the locality. At least nine-tenths of all rust-infected white pines in nurseries have been due to the proximity of these pernicious plants. So long as such black currants are permitted to exist in the pine-growing States shipment of white pine, currant, and gooseberry nursery stock from infected States must be closely restricted. If the black-currant plants have been generally eradicated, healthy white-pine stock can be produced from seed sown in an area entirely free from all other kinds of currant and gooseberry plants for a distance of 1,500 feet around the nursery beds. Certain wild currants, such as *Ribes bracteosum* and *R. petiolare* (found in the West), may have to be removed within a greater distance than 1,500 feet of the nursery, and also any large aggregation of *R. aureum*, *R. odoratum*, and *R. sanguinium*.

The total value of all European black currants in the United States is estimated to be $898,000, if each bush is worth $1.25 (an

excessive value). The value of the merchantable five-needled pine timber of the United States is $548,250,000, or six hundred times as great as the total value of the black-currant plants. The future value of the young pine already growing must be estimated in terms of national necessity rather than money.

Blister rust threatens the future of the white-pine forests. Cultivated black currants accelerate the advance of this disease. The United States can do without them better than it can suffer the blister-rust losses, due directly and indirectly to their cultivation. Federal plant quarantine No. 63 prohibits the interstate shipment of European black currants from any State into the 36 States having native white-pine forests and in which the planting of white pine is of great economic importance. Oregon has eradicated them from the State. Idaho, Montana, Washington, and California will soon be free from these plants. New York has declared them a public nuisance. Public welfare will best be served if the growing of these plants is discontinued in every State.

SAMUEL B. DETWILER.

BOOKS on Farming Increase A distinguished feature of recent farm literature is its realism. As contrasted with the prejudiced or the sentimental attitude toward agriculture, characteristic of past times, it seeks to view conditions as they actually are. This realistic attitude is found in both of the classes into which agricultural literature may be divided—the works written for the farmer or the student of agriculture, and the works intended to interpret farming and the farmer to city people.

The average number of books on agriculture published in the United States annually, exclusive of bulletins and other official publications, is slightly under 100. This number, many times that of a few years ago, indicates a broadening interest in agriculture, although the average sale of each book, which is under 5,000 copies, suggests that the interest is as yet far from ideal. One must, however, consider in this connection the number of excellent bulletins published by the United States Department of Agriculture and by the various State experiment stations, the circulation of some of which is as high as 2,000,000.

Production manifestly is the basis of agriculture, and a large proportion of the books in the field deal with this subject. These books, for the most part, are specific and accurate, based on experiment and investigation, tested by actual farm practice. The general book on agricultural production has disappeared, except as a text for elementary courses.

Financial Status of Farming

In recent years, however, the financial status of farming has directed attention to marketing and other economic problems. This is reflected in the titles of books in the agricultural field. A few years ago there were not even any general works on agricultural economic or farm management. Now, however, each year sees the publication of a number of specific books on the economic problems

of farming. More of these deal with farm marketing than with any other topic, and there are not a few significant discussions of the cooperative movement. Among books of the last year or two are American Cooperation, consisting of papers and discussions presented at the annual session of the American Institute of Cooperation, Mears and Tobriner's Principles and Practices of Cooperative Marketing, Nourse's American Agriculture and the European Market, Moorhouse's Management of the Farm, Boyle's Marketing of Agricultural Products, Benjamin's Marketing Poultry Products, Horner's Agricultural Marketing, Mackintosh's Agricultural Cooperation in Western Canada, and McMurry and McNall's Farm Accounting; Principles and Problems. Manifestly the business side of farming is receiving appropriate emphasis.

Nor is the interest confined to the strictly economic side of rural life. The Federal Council of Churches, for example, has published Social Aspects of Farmers' Cooperative Marketing, by B. Y. Landis. Indeed, the emphasis on economics has brought to light numerous social problems of the rural community. It has come to be recognized that the value of economic advancement is in promoting a more satisfying family and community life. As yet the social aspects of the country have not received the study which has been given to the economic side of farming, though progress has been made by the American Country Life Association and by various students. The two most notable recent books in the field are James Mickel Williams's Our Rural Heritage and The Expansion of Rural Life, which contain the results of a 20-year study of a single rural community in all its social aspects, with, of course, frequent references to other communities. For these works Doctor Williams was awarded the Grant Squires prize by Columbia University. Israel and Landis's Handbook of Rural Social Resources, published in 1926, both presents discussions of various types of rural social work and contains a directory of national agencies engaged in rural social work, with the program of each. The 10-volume encyclopedia entitled "The Book of Rural Life" is notable for the emphasis which it lays on both economic and social problems.

Few Works on Agricultural History

Only very recently has the history of agriculture received serious study. The number of works on the subject remains extremely small. Gras's History of Agriculture in Europe and America, published two years ago, is the only comprehensive study of this rather wide field. Agriculture in the northern part of the United States up to 1860 has been covered effectively in a volume by Percy Wells Bidwell and John I. Falconer. A volume dealing with the agriculture of the South is in process of preparation by L. C. Gray.

No little progress has been made in the last two or three years in interpreting agriculture and rural problems as a whole. Most of this has been done through newspapers and magazines, though such works as Bizzell's The Green Rising, Dies's Solving the Farm Riddle, Wallace's Our Debt and Duty to the Farmer, and Warren and Pearson's The Agricultural Situation, are significant contributions.

Perhaps a more vivid interpretation of the farmer as a person is obtainable from well-grounded fiction than from books which discuss problems as such. The increase in the number of novels dealing with farm life is a remarkable development of the last two or three years. For the most part these books are sound, sincere interpretations by writers familiar with the life with which they deal.

Three recent rural novels enter upon new ground. They present farmers in their effort to unite for the betterment of agriculture, chiefly on its marketing side. These works are Lorna Doone Beer's Prairie Fires, Lynn Montross's East of Eden, and E. R. Eastman's The Trouble Maker.

The Farmer as Individualist

The other recent farm novels treat of the farmer in his traditional individualism. It is noteworthy that all of these novels give due emphasis to the place of women in farm life, a subject that receives insufficient attention in most discussions of rural problems. Among contemporary farm novels are G. D. Eaton's Backfurrow, Ben Ames Williams's The Rational Hind, Ellen Glasgow's Barren Ground, Walter J. Muilenburg's Prairie, Thomas Boyd's Samuel Drummond, and John T. Frederick's Green Bush. The last of these works makes as vivid an interpretation as has ever been made in America of the deepest aspects of farm life. The author of this book, himself a farmer as well as a novelist, has been able to create a credible character who finds final peace on a northern farm. He says:

> Of this alone I can be certain: That love and knowledge of the earth, which means daily observations and acceptance of the facts of birth and death, of the puniness of man's efforts and the little meaning of his life, has brought me happiness, compounded of joy in simple things—pleasure in food, in wife and children, in beauty of flower and tree, of sky and water and the forms of earth, in the dependence and faithfulness of beasts, in freedom that comes from knowledge and acceptance of my weakness and of death.
>
> The earth has maimed and broken me, perhaps, as ultimately it will defeat every effort of my life. But also it has given me strength to bear disaster and defeat, and death.
>
> To me death is not a strange or fearful thing. I see it all about me daily, hourly—myself the agent of a million deaths as I reap or mow or plough my fields. All day long I slaughter little trees—slender gray-trunked maples, green-barked poplars, silvery birches—that my cattle may have a place to graze, or that my plough may turn the soil to raise food for beasts and men. I know death as common and simple—a part of life.

NELSON ANTRIM CRAWFORD.

BOYS' and Girls' Club Leadership The value of local volunteer leadership in boys' and girls' club work has been recognized from the outset. Owing to the cost, it has been possible to extend the paid leadership in club work only to the county units. Consequently, to obtain a broad expansion of the work, it has been necessary to utilize local volunteer leadership extensively. As a result, a large number of people with ability for unselfish leadership, have become active partners with their paid leaders in helping young people through club work to develop themselves and become constructive community builders.

To-day there are in the United States over 50,000 such leaders carefully guiding the half million and more boys and girls, 10 to 20 years of age, enrolled as club members. These leaders meet with club members in their local groups at regular intervals in the field or barn, or in the comfortable living room of a farm home. Topics of discussion relate to poultry, gardening, canning, bread baking, dairying, or some other line of work of particular interest to young people and of definite concern in a local extension program centered in the upbuilding of community life.

Developing Local Leadership

There are two ways along which local leadership in boys' and girls' club work is being developed. When we think of the vast number of farm boys and girls which should be reached, the problem

FIG. 22.—Boys and girls as club members become familiar with the extension programs of their community and county and take part in carrying it out. Thus they are prepared when older to take active and constructive leadership in community and county affairs

is that of selecting and developing adult leadership for them. When we think of the farm boys and girls with whom club work is being conducted, the problem is that of developing in boys and girls those qualities which will fit them to become leaders in their turn. The good local leader continually calls into play the qualities of leadership in the members of his group. He aims to enable each boy and girl to make maximum contribution to the work under way.

Of the 50,000 local adult leaders who led clubs of boys and girls in 1925, those who proved most successful were interested in making the community the best possible place for young people to live in. They were endowed with those personal traits which attract

young people. They were able to place as well as to assume responsibility. They were recognized and respected by their associates. They were either skilled or willing to be trained in the farm and home practices which were to be demonstrated by club members.

More attention is being given to the amount of work to be done by each leader. Instead of expecting all to perform the full task, the amount to be reasonably expected from each is being increasingly determined by the agent in the county. Interest, capability, and available time of the leader are important factors to be considered. Invariably, however, they attend meetings of the club, encourage and assist the members in solving their individual problems, and keep the community informed concerning the work.

FIG. 23.—The efficient local leader constantly studies the abilities of his club members and gets each one to take as active a part as possible

Conferences for local leaders are being held in every State. In some instances, they are state-wide but more often they are confined to county units. State leaders, subject-matter specialists, and county agents assist at these conferences as well as through personal conferences, correspondence, and literature in order to render as efficient as possible the work of the volunteer leader. In some States, the local leaders are organized into State and county associations, assuming responsibilities for various club activities such as exhibits, encampments, and tours. An increasing number of older boys and girls known as captains of smaller groups are now sharing such responsibilities. Successful adult leaders continually study the members of their groups and encourage them to assume responsibility for club activities.

Through the initiative, confidence, and broadened viewpoint developed through such leadership, many former club members them-

selves are now taking an active part as leaders in their home communities. They are acting as officers in rural organizations, directors of fair associations, trustees of school boards, and county commissioners. They are thus wielding considerable influence in developing among their neighbors a feeling of responsibility which in turn insures a happier and more self-sustaining rural people.

In realizing such results, local volunteer leaders find their reward. They gain too that personal satisfaction which comes from unselfishly serving the community and watching conditions grow better. They win the approval of parents and neighbors as well as that of college-trained specialists who realize the good being done. Perhaps greatest of all, they win the confidence of those young people who, in turn, will ultimately become constructive community leaders.

GERTRUDE L. WARREN.

BOVINE Tuberculosis Being Suppressed Nine years have elapsed since animal tuberculosis-eradication work was begun by the department in cooperation with the various States. It was believed at the time that, in order to make progress in keeping with the expenditure of funds provided by Congress and the respective State legislatures, the work would require the indorsement and hearty practical cooperation of the individual herd owner as well as other agencies interested in our livestock industry.

Tuberculin, as a diagnostic agent for detecting tuberculosis in livestock, had been used in the United States since 1892. Livestock owners had had an opportunity to become familiar with this product, and its efficiency, through their local veterinarians. However, they did not avail themselves of the opportunity to free their herds of tuberculosis in a way that would insure the development of the industry on a safe and sound basis. Tuberculin testing in various localities throughout the country had been of a sporadic nature, and it is doubtful whether much good would have been accomplished by the system then in vogue.

The department took the position that each cattle owner should be responsible for maintaining his herd on a tuberculosis-free basis, and that he should so maintain it when he became sufficiently familiar with the economic importance of the work. In the development of the cooperative plan in the States where it was inaugurated, the first steps taken were the dissemination of knowledge of the existence of the disease, the ravages wrought by it in cattle and swine, the economy that could be effected by its control and eradication, and the necessity for maintaining herds in a tuberculosis-free status. An educational campaign, consisting of the distribution of pamphlets, posters, bulletins, and the exhibition of motion pictures, was carried on in every community.

As a concrete method of controlling the disease in individual herds, the accredited-herd plan was adopted by the livestock sanitary officials of the various States at the annual meeting of the United States Livestock Sanitary Association in December, 1917. This plan was approved by the Federal Government and then presented to the livestock owners. Under the plan each owner agreed to submit his herd to the tuberculin test whenever it was deemed

advisable by the cooperating authorities. He further agreed to dispose of tuberculous animals, clean and disinfect his premises, and to procure replacements of cattle from herds which were considered free from the disease. In this way cooperation was established among the livestock sanitary officials in all the States, the livestock owners, and the Federal Government.

Press Gives Active Support

In the campaign of education the most potent influence outside of the regular authorities was exercised through the press and the agricultural papers. The editors, both of the daily press and of the periodical farm papers, commended the work to the livestock owners, and watching its progress, pointed out from time to time ways by which the method might be improved upon. They encouraged the officials and livestock owners to work together in the great enterprise contemplated—the suppression of the great white plague among the livestock of America. Cooperative assistance, however, was not limited to the organization heretofore set forth.

The livestock exchanges throughout the country, recognizing the importance of checking the spread of tuberculosis, and realizing the future benefits to be derived through its suppression, lent their assistance by actively cooperating in the employment of commissioners who carried on educational work and encouraged legislative bodies to provide adequate funds for the campaign.

These agencies were maintained through funds of the various bodies affiliated with the marketing and slaughtering of livestock at the various market points. Active cooperation was received from so many sources that it is difficult to enumerate those that have participated in the work and have done so much for its successful conduct.

The agricultural colleges, through their extension services and veterinary departments, have rendered valuable support and other organizations have been prominent in advancing the work throughout the country. The practicing veterinarians throughout the country have rendered most excellent service, both by making private tuberculin tests for herd owners and by assisting county, State, and Federal forces in area work. More than 6,000 veterinarians have qualified by written examinations to do tuberculin testing under the uniform accredited-herd plan.

Cooperation Produces Results

In 1917 there were no tuberculosis-free accredited herds in the United States, with the exception of a comparatively small number in Minnesota and Illinois. On July 1, 1926, there were 96,392 accredited herds, comprising 1,577,087 cattle, and in addition to these there were 1,304,432 once-tested herds with a total of 10,358,259 cattle. Both groups of herds are being added to each month. From 1917 to June 30, 1926, 29,359,407 cattle received either their initial tuberculin test or a retest, of which 1,008,741 cattle reacted and were condemned and killed. At the end of the last fiscal year, 756 counties were engaged in area tuberculosis work, and 198 counties, one part of county, and 4 townships were recognized as "modified areas," indicating that tuberculosis was known to exist among the cattle to

less than one-half of 1 per cent. Such areas are modified for a period of three years, during which cattle may be moved interstate without the tuberculin test. At the expiration of three years the

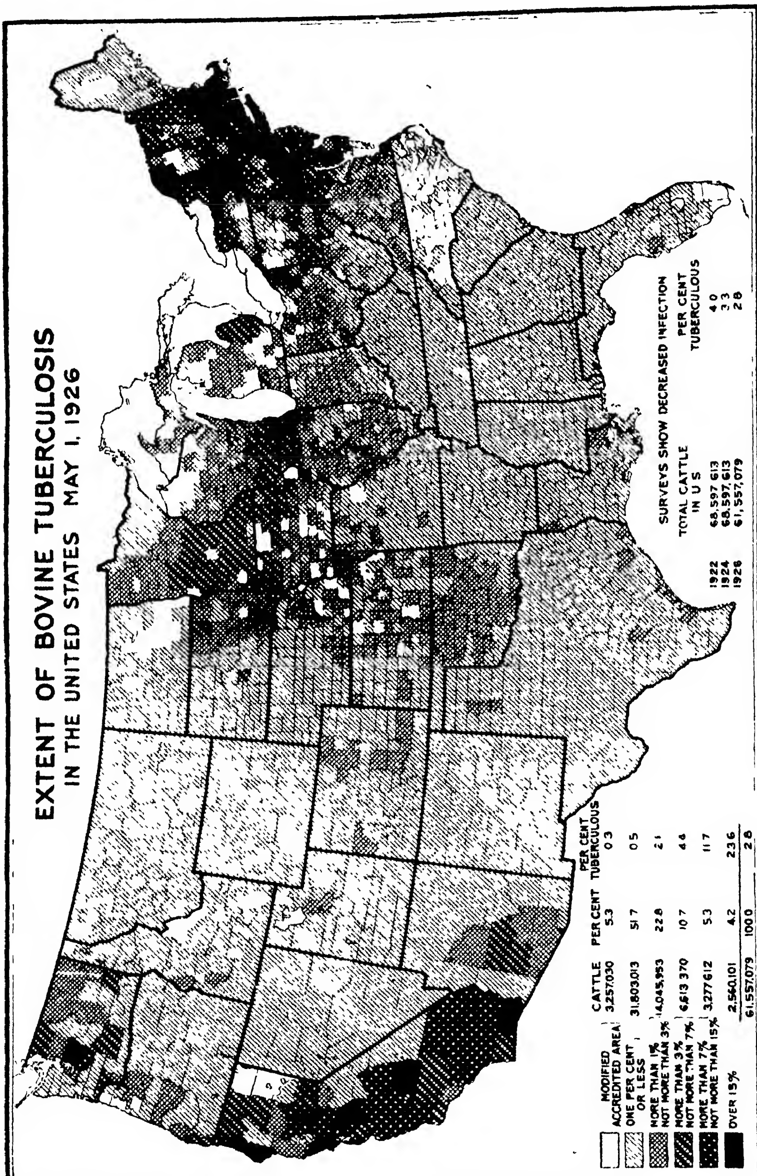

FIG. 24.—Distribution of bovine tuberculosis and the degree of infection in various portions of the United States. Results of surveys conducted in 1922, 1924, and 1926 indicate a gradual decline in the extent of this disease

county must show that the infection still is less than one-half of 1 per cent. This is accomplished by the tuberculin testing of at least 20 per cent of the cattle in the modified area. In most of the States practically all the purebred herds of cattle are under State and Federal supervision for accreditation.

Owners of accredited herds, determined to protect their cattle from reinfection by neighboring tuberculous herds, insisted that the area plan of eradicating tuberculosis be put in operation. This plan was adopted as one of the main projects of tuberculosis work since its inauguration in 1917. The area plan has almost supplanted the individual accredited-herd work in many States. It is well adapted to any program for suppressing the disease, and it can be applied in such a way as to fit the condition which exists in any State. A number of States have adopted a program of work which contemplates the tuberculin testing of all the cattle within a given number of townships and counties each year.

Cooperation is Required

The progress of the work under the area plan depends largely upon the amount of cooperation obtained, not only from the livestock owners but from the local officials and prominent citizens, from civic organizations, women's clubs, business organizations, and the public at large. In the larger towns and cities, as well as in small communities, the determination of health officials, supported by the public, to obtain milk from tuberculosis-free cattle has been a great stimulus to the work. It is doubtful whether so much progress could have been made in the work without the aid of those who realize the importance of the control and eradication of tuberculosis of livestock to public health. The part played by bovine tuberculosis in affecting the human family with the great white plague is being recognized more and more each year.

Summarizing cooperation and its influence on tuberculosis-eradication work, it is apparent that there is no other project of animal-disease-control work that is associated so closely with human health and welfare, and which is more entitled to the hearty support of the public at large, not only in the rural districts, but in the cities as well.

J. A. KIERNAN.

BREEDING Improved Livestock "That's good hay," an extension worker remarked to a busy farmer, who was putting a load of alfalfa into his barn. "But," he added, "a good many other farmers near here are getting better prices for their hay than you are likely to get for this."

"How's that?" the surprised farmer demanded.

"Because they are feeding it to better livestock. Improved animals pay better returns for the feed they get," was the extension worker's reply.

This brief conversation resulted in serious thinking on the farmer's part and some months later influenced him to obtain a purebred bull to grade up his herd.

The fascination of livestock breeding as an art and the challenge of competition in the show ring continue to appeal to many breeders, but there is even greater interest, perhaps, in breeding to improve the utility value of farm livestock. During the last year department officials sponsoring better-livestock studies have come into the possession of several singular facts.

An extensive demonstration, privately financed but now conducted by trustees of three universities, at a large stock farm near Kansas City, Mo., has shown conclusively the value of purebred beef bulls in grading up a herd of common cows. The enterprise, commonly know as the Sni-a-Bar Farms demonstration, has already produced many carloads of fat steers of the first, second, and third crosses.

Market returns show clearly that breeding is a dominant factor in the production of high-quality beeves, and that good feeding and management will not bring best results unless the element of good breeding is present also. The use of a good purebred bull, according to the results, means approximately $2 a hundredweight increased value of his calves at marketing time compared with average calves sired by scrub or grade bulls. During a 10-year period, steers sired by purebred bulls at Sni-a-Bar Farms topped the market 16 out of 20 times. Similar results are being obtained in other localities also where the sires are of high quality.

FIG. 25.—The quality and market value of stock produced determine the real worth of purebred sires. These fine Hereford calves were raised by a stockman cooperating with the department in livestock improvement work

Purebred Bulls in Union County, Ky.

As a result of local efforts to improve the bulls in Union County, Ky., cattlemen of that county attained in April, 1926, the enviable goal of having 100 per cent of its bulls purebred. All scrub and grade bulls had been shipped out for slaughter, and 140 purebreds of good quality—chiefly of the beef breeds—were in service. The accomplishment was the result of excellent teamwork among cattle owners with assistance from county, State, and Federal livestock specialists. For the last two years the majority of bulls in the county had been purebred, and, as in the case of the Sni-a-Bar Farms demonstration, the quality of stock sold to market was evident in the returns received. At the three principal packing centers to which beef cattle are sent—namely, Evansville, Ind., Louisville, Ky., and St. Louis, Mo.—stock from Union County usually top the market.

With the accumulation of evidence that improved livestock are more efficient producers than common animals, there has been an increasing interest in stock breeding among banks, railroads, and the meat-packing industry. In one of its newspaper advertisements, a bank in Union County, Ky., recently stated: "This bank sponsors every move for the betterment of livestock conditions in Union County. The best asset on the farm is the purebred sire."

There is similar interest in dairy localities. In Campbell County, Ky., the most productive herd in 1920 averaged only 24 pounds of milk daily per cow. At that time only 30 purebred dairy cattle could be found in the entire county, and these were owned by four farmers. Following local efforts to improve the quality and efficiency of the stock, conditions have improved in a most striking manner in the short space of six years. Now a heifer to be kept in a good herd,

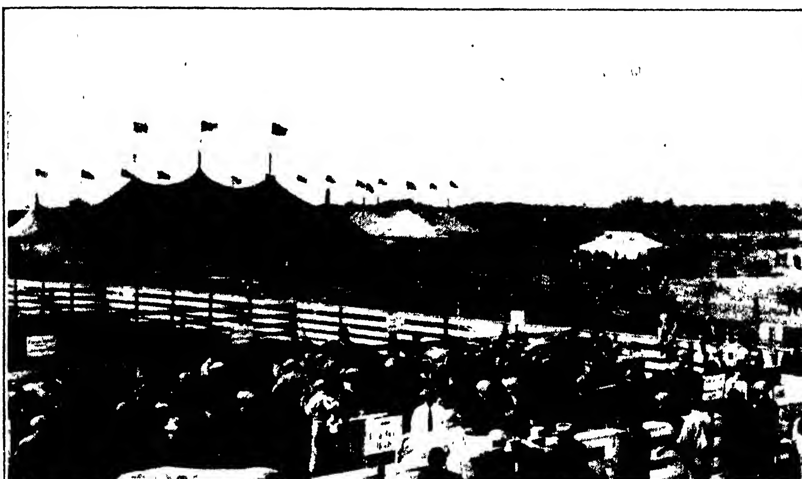

FIG. 26.—A "bull circus," as the public demonstrations of purebred sires and their offspring at Sni-a-Bar Farms might aptly be called. The picture illustrates the great public interest in improved breeding as a means of making stock raising more profitable

must give not less than 35 pounds of milk a day, and, in contrast to the former low number of purebreds in the county, there are now 500 purebred cattle owned by 75 dairymen.

The cashier of a bank in that county reports an increase of bank deposits from $475,000 to more than $800,000 in that time, notwithstanding that a competing bank opened its doors in the meantime. The cashier reported that he had observed deposits of individual customers to pick up noticeably after the purchase of purebred bulls. "We find the same thing true," he stated, "in payments on notes. Owners of purebred sires make better payments on mortgages and are better risks. Eighty-five per cent of the depositors of this bank keep cattle."

Public Trials Show Sentiment

One of the most entertaining as well as effective means for bringing about a public discussion of livestock improvement is through

mock trials, at which an inferior sire is the prisoner at the bar. His friends have the opportunity to defend him; others, who have concluded that inferior breeding stock are a distinct liability, have the opportunity to prove, by their experience, that such animals are out of line with high-priced land, labor, feed, and other costs of production. Attendance at some of the trials has exceeded 1,000 persons.

There has been a tendency for communities to look at county agricultural agents or other local officials for leadership in livestock improvement work. But even the most energetic and capable leaders assert that, for such work to be successful, committees of enthusiastic stock owners must work with them. To bring about extensive livestock improvement among stock owners of varying temperaments, nationalities, and financial means is far too great a task for a small corps of specialists, however capable. The influence of progressive

FIG. 27.—Planning a county-wide drive to eradicate inferior sires. A map showing the location of farms and the kind of sires used is an important aid in the work

local breeders, when appointed on active committees, on the other hand, has been highly successful in making the merits of purebred sires better known.

Evolution Toward Better Stock is in Progress

Evidence from many sources shows that livestock evolution toward improved types is going forward gradually. More than 17,000 stock owners cooperating with the department have signified their intention of improving their herds and flocks by the use of purebred sires. In 43 counties this work is specially intensive, there being 100 or more of such progressive stockmen in each of these counties.

With the use of purebred sires, there is also a large increase in the number of purebred females. Production of purebred livestock has now reached the point where, according to a recent survey, purebred animals are now being sold extensively for slaughter. This is

specially true of hogs and, to a somewhat less extent, of cattle and sheep. Thus, the breeder of improved livestock has two outlets, the sale of purebreds for breeding stock, and disposal of purebreds and high grades for slaughter, both of which methods are satisfactory and evidently profitable.

The average experience of about 500 stock owners as reported to the department indicates that the earning power of well-bred livestock is fully a third greater than that of common animals resulting from random breeding. Such an advantage is certain to become an important influence in returns from stock raising, both from an individual point of view and in international competition.

D. S. BURCH.

BUILDING Decay and Ways of Preventing It Wood will wear out in the course of time under hard usage. When it is left exposed to the action of air, sun, and rain it slowly goes to pieces. It has its natural enemies, wood-rotting fungi and insects, which destroy it, but in spite of them all it will last a long time if given proper care. Clapboards which are not protected by paint are more than likely to warp and twist out of shape. The exposed surfaces check and crack, and the nails are sure to work loose. This form of deterioration is called weathering. It was formerly believed that wood rotted simply because it was exposed to air and water. It is now known that this is only partially true. Rot is caused by fungi which grow in wood and destroy it as they grow.

Weathering and rot often work together to cause a great deal of damage to farm buildings, implements, and machinery. It is sometimes difficult to prevent wear. It is a fact, however, that wood which has begun to rot will break or wear out sooner than sound wood, because rot reduces strength. Of course, some kinds of wood stand up much better than others under constant exposure. Weathering can be stopped by paint, properly applied to seasoned wood. It is much better to leave green lumber, or green fence posts, unpainted, because paint retards the evaporation of moisture, and the wood is therefore likely to rot sooner than if it were left exposed.

Fungi Can Not Grow Without Water

The toadstools and shelf fungi of the fields and trees are representative members of the great family of wood-destroying fungi. They are all plants. The key to the whole problem of controlling decay is the fact that they can not grow without water. Toadstools spring up overnight after a rain, but they are rarely seen during a spell of hot dry weather. Excess water, however, prevents decay. If wood is completely submerged fungi can not grow, because their air supply is cut off. Air and water must be available in proper proportions. Stagnant, saturated air favors fungous growth. Temperature also plays an important part in decay, for, other things being equal, wood will rot more rapidly in warm climates than in cold climates.

Wood that is in contact with the ground is certain to be wet a good part of the time. Poles and posts decay at the ground line because the moisture which the wood absorbs from the soil makes it possible for fungi to grow. The same would be true of foundation posts or of any wood resting on damp foundations. Floors laid directly on concrete will rot out very quickly if the concrete becomes moistened by seepage water. The ends of beams which are embedded in mortar or brickwork will absorb moisture from the wall and decay. Rot is almost sure to develop at the base of porch pillars, or around steps, where water can seep into joints or cracks. Leaky roofs, gutters, rain spouts, and water pipes will sometimes provide just enough water to keep wood-destroying fungi growing. Occasionally, in muggy weather, the drip from sweating cold-water pipes is sufficient.

Dry Wood Will Not Rot

In considering the prevention of decay in buildings the most important principle to bear in mind is that the wood must be kept dry. As a general rule buildings should be set on concrete, or on well-made brick or stone foundations. The rest is comparatively easy. Drain surface water away from the foundations, and make provision for draining seepage water out of the cellar. Provide enough gutters and spouts to take care of rain water, and make sure that there are no leaks in roofs, or around sinks, pumps, water pipes, water tanks, refrigerators, washbowls, bathtubs, and toilets. See to it that there are proper means for ventilating all cellars and basements, and all unexcavated spaces under sheds and porches. If these precautions are taken there will be no decay.

In case rot has already gone so far that repairs are necessary, the first step will be the removal of every bit of the wood which shows signs of rot, and, in addition, some of the apparently sound wood around the rotten place. There is no way to tell the early stages of rot with the naked eye. The only safe procedure is to take out more wood than appears to be necessary. All of the material removed should be burned. Fix all leaks in water pipes, spouts, and drains, and improve the chances for ventilation if necessary. Then repair the damage with well seasoned heartwood, or with wood which has been properly treated with a wood preservative.[2]

The wooden parts of farm machinery depreciate very rapidly when equipment is left in the open. Everyone knows that iron and steel will rust under such circumstances, but few people seem to realize that hickory and ash, for example, are not durable woods. To be sure they are hard and strong, but only so long as they are protected from weathering and decay. One of the first principles of farm economy is to store farm machinery and tools in dry sheds.

Nondurable Fence Posts Should be Treated

Aside from the depreciation in buildings and farm equipment probably the most troublesome constant problem on the farm is the maintenance of fencing. Millions of fence posts are cut in the

[2] See The Preservative Treatment of Farm Timbers, Farmers' Bulletin 744, United States Department of Agriculture.

forests and woodlands of the United States annually. Each individual owner of farm land knows that most of the posts which have to be replaced are rotten and that if he could stop the rot he could save himself a lot of work. It is, of course, impossible to keep a fence post dry. The fence can not be protected from the weather. Unless durable woods in a class with cedar, redwood, catalpa, black locust, or white oak are available the only businesslike way to handle the problem is to protect the fence post from decay by treating it with a wood preservative.

Prevention of excessive weathering and avoidable decay not only saves immense quantities of raw material, but also untold numbers of hours of replacement labor, which could be used much more pleasantly or productively.

REGINALD H. COLLEY.

BULB Culture Makes Progress Rather remarkable progress has been made during the past 10 years in the acquirement of information on bulb culture by the rank and file of our plantsmen. Still more remarkable has been the change in the general attitude toward the production of bulbous stocks in America. Instead of questioning whether these various items can be grown here, the only doubt now is whether it can be done at a profit, and even that doubt is fast disappearing.

The gladiolus, the freesia, the caladium, the tuberose, and the calla lily, have long become characteristically American. No one has thought of going abroad for commercial stocks of them for a long time. Ere long the Regal and other lilies will be with us in such abundant supply as to satisfy our demands.

Impatience is sometimes expressed at the slowness with which such an easily-produced bulb as the Regal lily has become available commercially, but no surprise should be occasioned by a delay of 8 or 10 years in the production of a new crop. It should be remembered that stocks must be worked up, costly mistakes corrected, and experience acquired. These matters take years to accomplish.

Daffodils

The country has had experiences, both commercial and experimental, with daffodil stocks extending over a period of 15 years or more, and with some of the older varieties a great deal longer than that. In southern Illinois and the cape region of Virginia experiences have been had extending over a period of 30 years or more. In the latter region it has been with stocks imported in colonial days. All of these experiences have been an asset in the establishment of the industry of American production of these stocks.

Experiences and experiments have demonstrated the possibility of producing stocks of daffodils in various sections of the country equal to those grown anywhere. One of the most astonishing things in connection with recent experiences with the commercial varieties of daffodils is that the crop is about as adaptable as oats. It is being produced satisfactorily on sands, peats, and clays in the Northwest;

on various types of soils on the Atlantic coastal plain; and even on the northernmost of the southern sands.

Handling in storage has been a rather difficult problem in the warmer sections but it is gradually being learned that protection from undue exposure, with abundant aeration, accomplishes the desired result.

The Polyanthus group of daffodils, adapted to the warmer sections of the country, seem to present the least difficulty. Even the oriental type of the "Chinese sacred lily" can be duplicated on our muck and peat soils, and Paperwhites of perfect form, firmness, and performance are now grown on both heavy clay and sandy loams.

Tulips

Tulips have also proved to be even more adaptable to soil conditions than daffodils. They demand fresh, clean soil each year, but will succeed on clays and sands when proper fertility is supplied

FIG. 28.—Elvira narcissus the second year after setting. When dug, this area yielded at the rate of more than 1,000 bushel lug boxes of bulbs per acre. Plant introduction garden, Bellingham, Wash.

and moisture is controlled. Successes are recorded for the Pacific Northwest, Michigan, and the Northern Atlantic coastal plain.

In the warmer sections the great difficulty again has been with storage during the dormant season, but it has been learned that if provision is made to reduce ventilation after the bulbs are dry, the coats can be saved, excessive desiccation prevented, and the bulbs preserved in good condition.

Hyacinths

Hyacinths have always been looked upon as a proverbially difficult item to produce and one, above all others, that America could not grow. After 10 years of experience the writer has no hesitancy in saying that they present no insurmountable difficulties.

There is practiced with the hyacinth an artificial propagation. This process must be learned, but it is simple and the same in principle as propagation from cuttings generally. Details of procedure

vary a little, but they are not complicated nor are the conditions of success any more exacting than those required to grow many of our common plants from cuttings.

Experimental stocks of hyacinths are now in their third propagation from imported bulbs and seem to hold up well both in Virginia and the State of Washington. One commercial success is chronicled on Puget Sound, where it is considered that the hyacinth has succeeded even better than tulips or daffodils on the same farm.

Lilies

It is considered that at the present time as much real progress is being made in the production of lily stocks in this country as in any

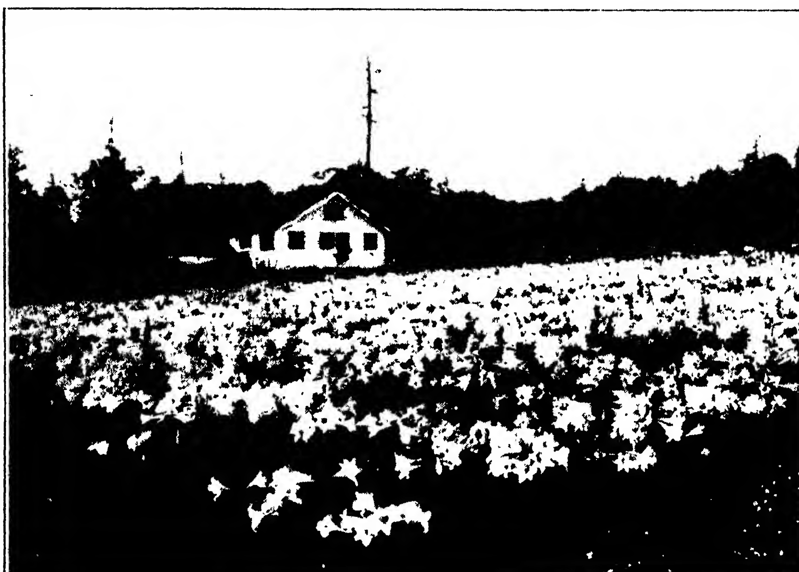

FIG. 29.—The Easter lily (*Lilium longiflorum*) in a commercial planting near Seattle, Wash.

other group of bulbs. The ready propagation from seed, from scales, and from layered and heeled-in stems is giving a great impetus to the culture in several sections of the country and under very diverse conditions.

Material for propagation is scarce and high priced, but when once a little is secured it works up in numbers very rapidly, often as high as a hundredfold at a vegetative propagation, and many hundredfold from seed.

Culture of lilies must be looked upon generally as a three-year task, i. e., it takes about that time to produce merchantable stock in most cases. This, coupled with the necessity of gaining experience with each item and starting with a limited quantity of stock, are the deterrent factors to rapid progress. Stocking the market may, therefore, be some distance away, but good healthy progress is being made in that direction. There are a dozen or more growers in the country

to-day that marvel at their own success, which eclipses even their fondest expectations of five or six years ago.

All of this, however, is not supplying the market—far from it. There are some years of struggle ahead with little or no income, and there are discouragements, due to unforeseen causes, but the start has been made. Enough experience has already been gained to prove that a baker's dozen of good commercial lilies can be produced in quantity in our northern tier of States on both coasts, at many inland points, and some of them are on our Gulf coast.

Iris

The iris, although a single genus, is an exceedingly diverse group, most easily divided into sections by the characteristics of the underground parts. The rhizomatous sections especially have always been grown in sufficient numbers and have received a great impetus from the organization of the American Iris Society. It has been quite different with the cormous and bulbous groups.

The Spanish and Dutch irises, which form one of the groups of the bulbous-rooted section of the genus, were entirely imported until about 10 years ago. Now, after 10 years of experience and a great deal of adverse criticism, a number of growers have sensed the requirements and accomplished the production of first-class stocks. This, again, has been done under very diverse conditions. Success is scored on both the northern and median sections of the Atlantic coastal plain, in southern California, and northwestern Washington.

Here again the greatest difficulty has been with storage during the dormant season. The growing has not been so difficult when good stock was planted, but, with overexposure causing excessive desiccation, the planting stock has so often been devitalized. The neglect of the inroads of the tulip or iris aphid, easily controlled by the application of tobacco products, has also contributed largely to failures, especially in California.

One potent influence inhibiting the accumulation of stocks of these groups of iris has been the commercial situation. There is little use to expect the grower to produce bulbs of Spanish and Dutch iris to sell for $35 per 1,000 when the cut flowers command a price which will net him 50 to 100 per cent more. The cutting of the flowers, of course, reduces the vitality of the bulbs which, when finding their way onto the forcing benches, perform poorly.

Both growers and dealers realize that the round bulb in Spanish or Dutch iris is the most desirable for the forcing benches; however, little effort has yet been made to put this character of bulb, and this only, on the market. We are just beginning, after 10 years of experience, to put the right kind of material on the market.

The beautiful English iris, another bulbous group, has always been conspicuously absent from American gardens. We have learned that they too can be perfectly grown on Puget Sound, and one instance has recently been called to the writer's attention wherein one variety has thrived in a private garden in Massachusetts for a dozen years. Seedlings have already been produced in this country which seem to be vastly superior to the imported stocks.

The Palestine group of cormous-rooted iris and their hybrids are becoming so well understood that it is possible to grow them now not only on the Pacific coast but in our eastern humid regions as well, by simply digging them at the close of the growing season and carrying them dry on the shelves until planting time comes around again in late fall.

Miscellaneous Bulbs

Experimental experience, and in several cases commercial as well, is accumulating rapidly on many of the so-called lesser bulb stocks. Leucojum, ixia, sparaxis, babiana, watsonia, montbretia, nerine, amaryllis varieties, ranunculus, anemone, fritillaria, etc., are in some cases in sufficient quantity to supply a large portion of the demand.

FIG. 30.—Representatives of the Red Cross selling daffodil flowers at the Bellingham (Wash.) plant introduction garden during the war

Muscari, scilla, eranthis, ornithogalum, chionodoxa, galanthus, puschkinia, crocus, etc., have received less attention commercially. Experimental cultures show conclusively that there are no insurmountable difficulties in the production of any of these, while some are even weedy in their nature.

Forcing Quality

There is no mystery about the production of bulbous stocks that will force in contradistinction from good stocks with other qualities. A daffodil, a tulip, a hyacinth or a lily grown to proper size and firmness has a flower in it. If placed under suitable conditions of fertility, temperature, and moisture, it will produce that flower. That there is some mysterious secret process through which bulbs must be put after being properly matured is one of the fallacies which

have grown up in some quarters around a foreign article concerning the production of which little information was available.

Daffodils, tulips, or hyacinths, after being dug, need to be dried out so that they will not mold. In the case of the tulip there is danger that the drying may be carried too far and wilt the bulb and crack the skin. With the daffodil of any variety, or the hyacinth, there is less danger of too much drying. This, coupled with storage in the shade and not in stuffy, superheated situations, is all there is to the matter.

Of course, there are certain accelerating processes that may be employed to induce early flowering. The bulbs may be grown the last year in a region which has an early season. If the bulbs mature early they will force early the next season. A similar result may be accomplished by digging the bulbs before they are thoroughly mature with or without subjection to 10 to 20 per cent above the ordinary atmospheric temperature for a week or 10 days.

With our varied climate, from the short season of our northern tier of States to the early-maturing conditions from Virginia and Oregon south, these stocks will mature so as to force early enough without resort to any such artificial measures.

Experience over a period of 10 years in the production of these stocks and their subsequent forcing under glass has uniformly shown that properly grown stocks of any of these bulbs run true to form. When produced in America they force just the same as they do when grown elsewhere.

DAVID GRIFFITHS.

BUTTER and Egg Marketing Methods

Efficiency in marketing and merchandising dairy and poultry products is not obtained by "hit-and-miss" methods. Neither is it a "rule-of-thumb" proposition. Rather it is obtained by employment of methods which meet present-day conditions. Then why do "hit-and-miss" and "rule-of-thumb" methods continue? Why are not the more modern and scientific methods employed?

In many country communities the housewife or the farmer takes the eggs and farm-made butter to the country store where a price is paid or merchandise needed in the farm household is offered in trade for the butter and eggs. No grading for quality of the eggs or butter takes place. No premiums for higher quality eggs or butter are offered. No incentive is offered the producer to produce the best. One flat price is paid to all patrons. This is a "hit-and-miss" method. If the product sold is of ordinary or poor quality the producer "hits" a good price for it, but if it is of extra fine quality he usually "misses" the premium price that he should receive.

The situation is similar if it be cream or poultry that the farmer markets, although he may take the poultry to a local produce buyer and the cream to a local cream buyer. Here standardization or grading for quality is usually not employed and flat prices are paid for all qualities so long as they are of fair marketable quality.

These local buyers, including the country grocery store, ordinarily do not attempt to practice any standardization or grading of the products before they leave their hands. Consequently, by a sort of "rule-of-thumb" method they aim to dispose of the products at a price slightly above that which they have paid, or, if they operate on a commission, they pay the price authorized by their employer.

In this way more than half of the products of the poultry industry and more than one-third of those of the dairy industry, or nearly $1,000,000,000 worth of farm products, are sold by farmers annually. These methods continue in many country communities and towns because the producers do not realize the increased value that better methods would bring to them. Moreover, they have not set up marketing machinery which could employ the better methods, nor have they demanded of those to whom they sell that such methods be used.

Cooperatives Are Pioneering

In contrast to these methods, other communities are served by local buyers of eggs, farm butter, poultry, and cream or they have set up their own machinery in the form of cooperative marketing associations which standardize and grade the products according to their quality and pay a graduated series of prices for each product according to the market value of each standardized quality or grade. In turn, these buyers, and the cooperative marketing associations generally, seek to sell each quality or grade in that channel of trade where it is in greatest demand and brings the highest market price.

These buyers and associations often have their established brands and employ modern merchandising methods and advertising in creating and developing an increased demand for their particular products. If the local buyer is a cooperative organization and is a local unit of a large-scale organization or is affiliated by federation or otherwise with a large-scale marketing organization, it is able to bring directly to the community the benefits that accrue from such connection or affiliation.

Since such organizations often are capable of employing the most modern and scientific methods of marketing and merchandising, many benefits are obtained by the communities they serve. They not only have the incentive that results from standardization and a system of buying which recognizes quality, but they obtain the benefits which come through a system of distribution that seeks to widen the market for standardized and branded products. They sometimes obtain the maximum price because of these wider outlets and new demands.

Inefficiency is not due to incompetency of existing agencies, but to their lack of development of the more efficient methods which might be employed. Moreover, the volume of product handled by the local agencies is often too small to permit the setting up of a machinery that could economically employ the more modern and efficient methods. Some communities undoubtedly would not now appreciate the better methods even though they were made available. That may account for lack of modern methods in such communities.

There is no doubt that this inefficiency in marketing will tend to disappear with the growth of a better understanding and appreciation of the value of standardization among producers of dairy and poultry products. Concerted community effort will gradually be put forth to obtain the results which come from marketing farm products on a graded or quality basis.

R. C. POTTS.

CALF Crop in Beef Industry In the production of beef, calves are the basis of the final marketable product; thus the calf crop is a factor of great economic importance in the beef industry. The greater the percentage of calves raised the greater will be the returns from the enterprise, other conditions being equal. There is a close correlation between the net cost of raising the calf, the pounds of beef produced per cow, and the

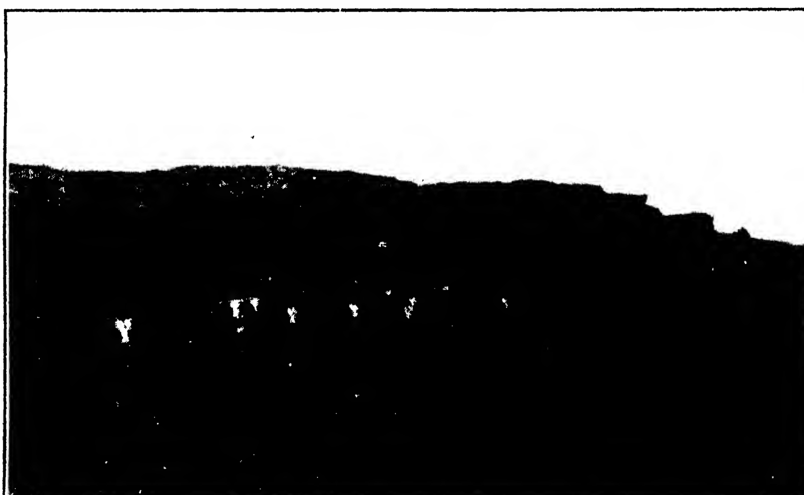

FIG. 31.—Two-year-old heifers on the range. Note their uniformity, which was brought about largely by good breeding

calf-crop percentage. The expense of maintaining the cows and bulls must be borne by the proceeds from the calves marketed. As the number of calves in a given herd increases, the net cost of raising each calf decreases proportionately.

Variation in the calf crop is influenced by many factors. Among the more important are the range conditions, the number of cows allotted to each bull, and the ability of the manager. Other factors having a direct bearing on the calf-crop percentage are the maintenance of the herd in a thrifty condition, high breeding efficiency in the herd, and, on the range, proper distribution of bulls.

Investigations show that the calf crop in range areas is affected more by range conditions than by any other factor. The rainfall and control of grazing are responsible for the condition of the range. The ranchman has no control over climatic conditions, but by careful management of the range, especially in normal seasons, he can put his grazing areas in a better condition to withstand droughts.

When grass and beef prices are good there is a tendency to overstock the range. Such a practice depletes the range and brings on ruin if followed by a drought.

Rotation Grazing Useful

A system of deferred and rotation grazing is of great value. Deferred grazing, allowing a vigorous growth of grass, or even allowing the grasses to seed occasionally before turning the cattle on the range is a very desirable practice. In some grazing areas there are numerous grasses, but usually one or two species predominate in a specific area. The various types of range should be grazed when at their best. This can be done by a system of rotation, moving the cattle from one area to another when conditions for grazing are most satisfactory.

FIG. 32.—Feeder calves with quality and uniformity are always in demand

Experiments have shown that under range conditions the calf crop is not affected by the number of cows allotted per bull unless the bull is allowed more than 25 cows. If the cattle are handled in small pastures, under controlled conditions, twice that number of cows can be bred to a proved sire with satisfactory results.

It is not only important to have a sufficient number of bulls in the herd, but they must be distributed properly over the range as well. The practice of weaning calves at 6 to 9 months of age, allowing the cows to regain normal vigor before bearing another calf, and the maintenance of the breeding herd in a thrifty condition are important factors in the successful management of a producing herd.

In addition to the importance of numbers, it is necessary that the calf crop possess quality, good weight for age, and early maturity. Too much emphasis can not be given to uniformity in the calf crop.

This can be obtained only by having all breeding animals conform to a certain type or standard, and by controlling breeding, so as to have all calves born at approximately the same time. A uniform drove of good-quality cattle nearly always tops the market.

W. H. Black.

CAMERA in Livestock Research Photographs when properly taken can be used for many purposes. Pictures are especially desirable for giving accurate descriptive information quickly. Several persons may read any amount of unillustrated text and no two will form the same mental picture of the subject. In the purchase of animals for

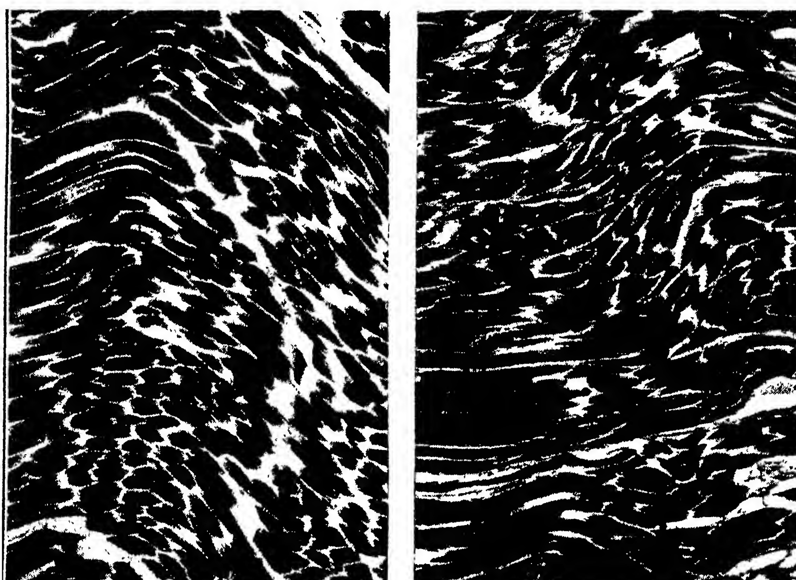

Fig. 33.—(Left) Photomicrograph of beef (enlarged 55 times) from common animal. Note the rather dense, stringy appearance. (Right) Photomicrograph of beef (enlarged 55 times) from choice animal; the meat has the appearance of having made more rapid growth

breeding purposes, when it is not practicable to see the stock, a written description may be entirely misinterpreted. The purchaser wants to see, as nearly as possible, an exact likeness of what he is going to get. If the animal has long or short legs, shallow or deep body, he wants to know it. In other words he wants to see as much as he can with no part exaggerated at the expense of another.

Animals in feeding experiments are constantly undergoing changes and it is not possible to remember the appearance of each at the beginning or at different intervals. In this work there are many points of value in which the camera is an excellent means of obtaining and preserving a record.

Other photographs of value are those taken through a microscope. They permit examination of the finest details whereby many important discoveries are made.

FIG. 34.—Winner of the 1924 horse-endurance ride at Warrenton, Va., photographed, A, before and, B, after the ride. The horse appears to be in as good condition at the finish as at the start, an almost incredible statement, but supported by photographic proof. Further evidence of the horse's vigor was the winning of the same ride the following year

FIG. 35.—Side-view pictures of hogs do not show some of the important points in conformation for comparing different breeds or types to best advantage. In this picture, taken directly from above, note the width across the shoulders of the Tamworth, on the left. This would cause a front view to make the Tamworth appear as broad as the Poland China, at right. Views out of the ordinary often show surprising results and draw attention to points otherwise overlooked

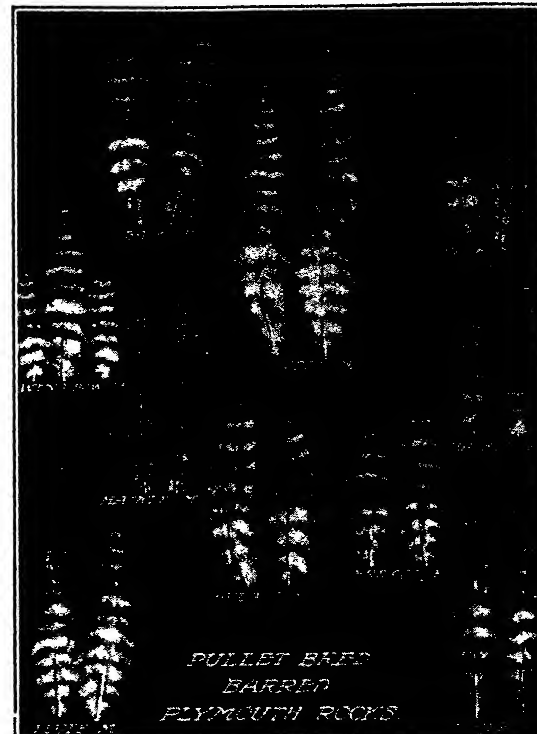

FIG. 36.—A photographic study showing distinctiveness of pattern in surface and undercolor of chicken feathers. It is impracticable to record shades or tones in any other way. The letters M and F refer to male and female

For several years horse associations in various parts of the country have held endurance rides which are considered very severe tests. Under present requirements the horse must carry a weight of 225 pounds, including the rider, 60 miles in 9 hours of each day for 5 consecutive days. For various reasons many horses do not finish the ride, but when animals are in good condition the test is not so exhausting as is sometimes asserted. As the photographs in Figure 34 show, the horse illustrated finished in excellent condition. It won in the same test the following year, demonstrating that the ride had no serious effects. Figure 35, which compares two types of hogs, shows another of the many ways of getting results with the camera. Besides its value in studies of breeding and feeding and in other ways that have been discussed, the camera is highly useful also in pointing out effects of diseases and parasites. Accordingly, it can be made an important adjunct to veterinary medicine and similar scientific work.

W. A. STENHOUSE.

CATTLE Feeding for Profit The net return from fattening cattle is determined by the width of the margin or spread between the purchase and sales price per pound and by the cost at which gains are made. It is necessary to have a margin to fatten cattle profitably because the cost of gain is usually higher than the sales price per pound. The problem of the feeder is to get the widest possible margin consistent with a low cost of gain.

FIG. 37.—Typical cattle-feeding scene in the Corn Belt

The margin received depends on the quality and degree of finish obtained and on the judgment used in purchasing feeder cattle, as well as on general market conditions when the cattle are sold. The feeder must be a good judge of values not only to recognize individuals that will do well in the feed lot but to estimate the probable price at which cattle of different weights, quality, and degree of finish will sell several months later when his steers will be marketed. The price received depends upon several seasonal influences which should be kept in mind and also upon many other factors of supply and demand, such as the number of cattle fed, general business conditions, and other things that can not be so readily foreseen.

The cost of gain depends largely on the price of feed, the length of feeding period, and the size and quality of cattle. Eighty-five per cent of the cost of gain is usually for feed. Hence, the margin required increases with the price of feed, particularly corn. Calves require about 65 per cent as much feed to put on 100 pounds of gain as heavy cattle of over 1,000 pounds initial weight. Cattle usually gain less rapidly as the feeding period is lengthened. This increases the cost of gain and the margin necessary to meet costs except in cases where the cost of gain is less than the sales price per pound, as is often true in feeding calves. It is possible to feed heavy cattle for short periods of 60 to 90 days with less margin than medium-weight cattle require because of their greater original weight. After this length of time, however, their greater cost of gain overbalances their advantage of greater original weight and the margin necessary to cover costs widens faster than for any other weight of cattle.

Ordinary Feeding Period

Ordinarily it requires a feeding period from seven to eight months to bring calves to a desirable weight and finish. A six-months' feeding period is sufficient for medium-weight cattle, and heavy feeders may be finished in four months' time. On account of their longer feeding period, calves consume practically as much grain per head as the heavy cattle. As shown in Table 1, the calves ate 44 bushels of corn per head as compared with 48 bushels for the heavy cattle. The calves gained 330 pounds, the yearlings 300 pounds, medium-weight steers 285 pounds, and the heavy cattle 260 pounds.

TABLE 1.—*Typical performance of steers fed in dry lot* [1]

Size of cattle	Initial weight	Gain per head	Time on feed	Daily ration		Corn per head	Margin required [2] with corn at 50 cents per bushel
				Corn	Hay		
	Pounds	*Pounds*	*Days*	*Pounds*	*Pounds*	*Bushels*	*Dollars*
Heavy	1,000	260	133	22	10	48	1.00 to 1.50
Medium	870	285	186	19	9	49	1.00 to 1.50
Yearlings	650	300	205	18	8	47	1.00 to 1.25
Calves	420	330	219	13	6	44	.50 to 1.25

[1] Figures taken from a five-year study of cattle feeding in the Corn Belt.
[2] This margin does not include shipping and marketing expense.

Heavy cattle are able to better utilize stalk pasture, corn fodder, and other coarse feeds than are calves and yearlings, and because they already have their growth they fatten more readily in a short time, whereas calves must be full-fed on grain for a much longer period or they will merely grow instead of fatten properly. The demand for cuts of beef from heavy cattle is much more limited than for beef from handy-weight steers and hence their price is more sensitive to changes in the market supply. This fact makes the feeding of heavy cattle more hazardous than the feeding of calves and yearlings.

The grade of cattle to fatten is a problem that must be considered by every feeder. There are a number of seasonal factors to be kept

in mind in this connection. Common cattle are generally lowest in price in October and November during the time of large runs of cattle from the range. Choice finished cattle are usually higher in price than at any other time of the year because there are ordinarily very few grain-fed steers marketed at this time. Because most of the corn-fed cattle are fattened during the winter and sold in the spring, the price of choice steers is lowest in April and May. Common steers, on the other hand, bring the highest price of the year during May.

Requirements in Fall Marketing

This seasonal variation in the price of different grades of beef cattle would suggest that fed cattle to be marketed during the late summer and fall should be of good quality and well finished so that they will not need to compete with the large number of range cattle being marketed at that time. Whether good or common cattle should be fattened during the winter to be sold in the spring depends on the price at which they may be bought. In the feed lot a good grade of steers will make more rapid and cheaper gains and will require a narrower margin to meet feeding costs than is necessary for common steers. Common steers, however, may often be purchased in the fall cheaply enough to overcome their disadvantage in feed-lot performance and sale price, especially if marketed not later than May of the following year.

George W. Collier.

CHANGES in Type of Farming, 1919–1924 Farming in the United States has undergone more radical changes during the five years from 1919 to 1924 than in any similar recent period. These changes have been due mainly to continued low prices for a number of the major farm products.

In the United States as a whole 3.25 per cent of the land included in farms in 1919 had been abandoned for farming purposes by the end of 1924.

The decrease in farm acreage was very general, being over 30 per cent in one State and nearly 20 per cent in another. The details are given in Figure 38. The only section of the country in which farm area increased was in the far West, in Oregon, Wyoming, Nevada, Utah, Arizona, and New Mexico. There was a decrease in every other State in the Union.

Changes in the percentages of farm land in harvested crops behaved somewhat differently, as is shown in Figure 39. In the United States as a whole there was a decrease of 2.3 per cent.

There are three groups of States in which there was an increase in the percentage of farm land in harvested crops. The largest group consists of Minnesota, Iowa, the tier of States from North Dakota to Kansas, and Montana and Colorado. There is a slight increase in New York and the New England States, and an increase in Tennessee, Arkansas, and Texas. In all the other States the percentage of farm land devoted to harvested crops decreased.

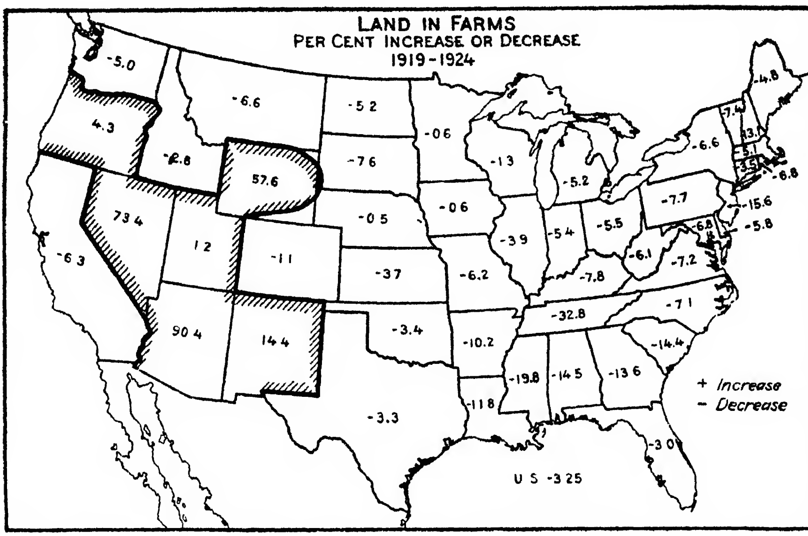

FIG. 38.--Acreage of land in farms decreased in most States. Actual abandonment, encroachment of cities and towns, and reversion to forest contributed to the decreases

Where Farm Land Decreased

The area of land in farms decreased in all the States east of Wyoming. In the Middle Atlantic and east North Central States, where the decrease in farm land was considerable, there was a still further decrease in the percentage of farm land in harvested crops. This means that in these groups of States there was not only a considerable abandonment of farm land, but that on land remaining in

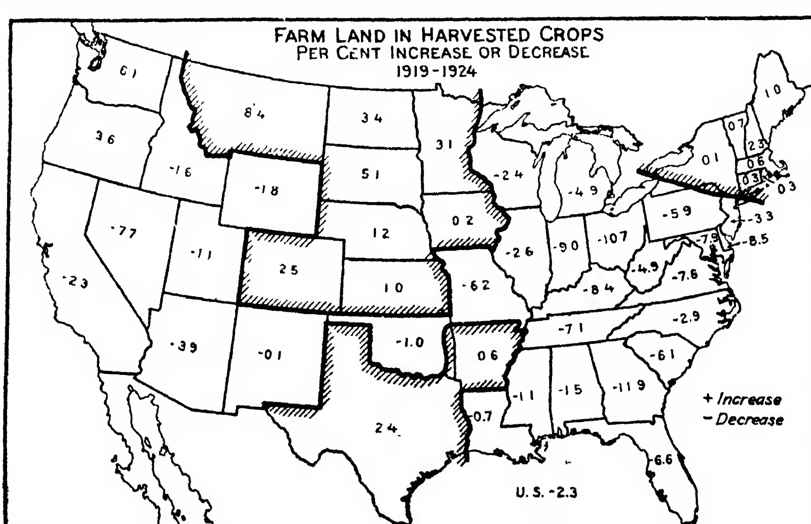

FIG. 39.—Three groups of States increased the percentage of farm land in harvested crops, though the percentage for the country as a whole declined. In some of the Western States the decrease is due to considerable increases in pasture areas

farms there was a reduction in the intensity of farming, much land formerly devoted to harvested crops reverting to grass or even to forest. In the two groups of States, the Northeastern and the Southern, in which there was a decrease in farm acreage as shown in Figure 38, but an increase in the percentage of farm land in harvested crops as shown in Figure 39, the interpretation is that the abandonment of farm land affected the less intensively used areas, such as grassland and timberland, more than it did crop land. In some of the Western States the decrease in the percentage of farm land in harvested crops is due to a considerable increase in pasture areas.

Figure 40 shows the increases and decreases in the area of harvested crops. Except for a few very small areas the only part of the country in which there was an increase in crop area was in the Plains region, extending from Texas to Montana, and eastward into southwestern Minnesota and northwestern Iowa. In most of this

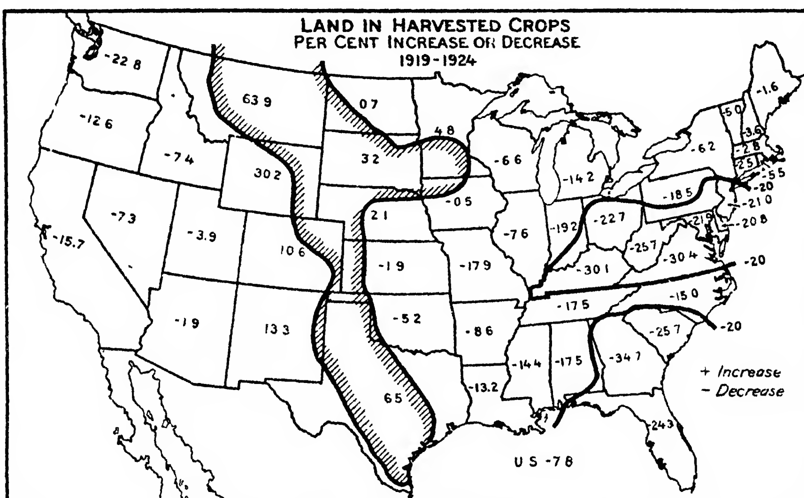

FIG. 40.—The acreage of crops harvested in 1924 was 29,089,832 acres less than in 1919. The decrease was general throughout the country except in the Plains region and a few very small areas within States which as a whole showed decreases

region land is still being brought into cultivation, while in the eastward extension into Minnesota and Iowa the increase is to be interpreted as a conversion of pasture land into crop land.

In all the rest of the country except in a few small areas the acreage of harvested crops decreased. In two groups of States, as shown in Figure 38, the decrease was in excess of 20 per cent. In the extreme southeastern group these decreases are due largely to the effect of the boll weevil. In the central-eastern group the effect is in part due to near-by industrial development which gives farmers a better opportunity to obtain employment in the industries. This is also a region in which wheat and corn are important crops. During a part of the period in question the prices of these two major-crop products were very low.

The decrease in crop area for the entire country was 7.8 per cent and is to be attributed in the main to the unprofitableness of farming during most of this period.

The various major crops were affected differently by the agricultural depression. The effect on each of them is described briefly in the following paragraphs:

The acreage of corn increased in the Northwestern States, the central and northern Great Plains, and in the northern Mountain States. In some of these States the increase was striking, particularly in North Dakota and Montana. The swine industry is following corn into this region. The northern Plains States are becoming an important factor in the hog industry.

Decrease of Corn Acreage

Outside of this group of States there was a decrease of corn acreage in every State in the Union, the decrease being very large in the Central Eastern States. Thus in Kentucky, which in 1919 had the largest proportion of its total crop area in corn of any State, the acreage decreased during the five-year period 32 per cent. In Ohio, which is an important corn State, the decrease was 39 per cent.

The relative importance of corn as a crop increased slightly for the country as a whole.

A marked increase in acreage of crops for silage, mostly corn, took place in the States from Wisconsin to Montana, including Wyoming, with a small increase in Iowa and South Dakota. There was also an increase in the acreage of silage in Ohio and in the Atlantic seaboard States except South Carolina and Delaware. Outside of these two areas only Mississippi and Nevada showed an increase in the acreage of silage crops.

Wheat Acreage Declines

Changes in wheat acreage were more marked than in the case of any other crop. For the country as a whole there was a decrease of more than 30 per cent in the area devoted to wheat, and the proportion of crop land devoted to wheat fell from 19.5 per cent in 1919 to 14.7 per cent in 1924. There was an actual increase in wheat acreage in only two States—New Mexico and Montana. The increase in Montana is due in part to the fact that in 1919 a very large acreage of wheat was not harvested, and hence was not included in the area of harvested crops.

The decrease in wheat acreage was very marked in many sections, amounting to 68.5 per cent in Missouri, 57 per cent in Minnesota, 45 per cent in Illinois, 43 per cent in Indiana, and 78 per cent in Kentucky.

This readjustment of wheat acreage represents a return to normal conditions following the remarkable extension of wheat acreage during the war. In several States the 1919 acreage had been increased to such an extent as to unbalance the farming.

Acreage in Oats and Hay

There was an increase in oat acreage in nearly all the States where corn acreage increased; that is, in the Northwest and the northern Plains region. In the States adjacent to this group there was a slight decrease in the acreage of oats. Elsewhere, except in Ohio and Arkansas, where the acreage increased, there was a very marked reduction, particularly in the extreme Southern States and in some of the New England States. For the country as a whole the acreage

of oats decreased less than 1 per cent. Oats made up 10.2 per cent of the harvested crop acreage in 1919, the percentage increasing slightly during the five years.

The acreage of hay was affected in a peculiar way by the radical changes that occurred during this census period. In the eastern and central portions of the country, where there was considerable abandonment of farm land, and for the most part a decrease in the proportion of farm land in harvested crops, the acreage of hay actually increased. This is to be accounted for largely by the fact that when farm land is abandoned so far as cultivated crops are concerned, there is already considerable acreage of hay and in most cases some new seeding which next year is added to the hay acreage. The increase in the acreage of this crop is therefore to be interpreted mainly as a result of a change toward less intensive utilization of the land. In some of the Western States the increase is due in part to the increasing importance of livestock in the local farming.

Changes in Cotton Acreage

Cotton acreage decreased in all the States from South Carolina to Louisiana except Alabama. The increase in Alabama is interpreted as a revival of agriculture after the panic caused by the advent of the boll weevil. The decrease in Georgia, South Carolina, and Florida was very large. Only in Georgia, however, did the relative importance of cotton decline during the period.

Along the northern border of the Cotton Belt, and particularly in the West, there was a phenomenal increase in cotton acreage. Texas, which in 1919 had the lion's share of the crop, increased the acreage during the period 44.5 per cent. For the country as a whole there was an increase of 16.2 per cent.

These increases were the result of the high prices for cotton that prevailed during most of the war years and for some years afterwards. The increase appears to have gone too far, for at the present time the situation of the cotton grower is critical because of low prices.

Further changes in type of farming are required to balance the agriculture of many sections. We now have a surplus of all the major crops. Cotton, hay, and oats are in the worst position.

W. J. Spillman.

Chestnut Blight is Unchecked Of the numerous foreign plant diseases which have gained entrance into this country, none has been more destructive than the chestnut blight, a fungous disease from Asia. In the last 25 years millions of acres of chestnut growth have been killed by the blight and the remaining American chestnuts in the East face certain destruction.

The chestnut-orchard industry of the New England and the Middle Atlantic States has been practically destroyed by the blight and there remain only rare trees of the American and European chestnuts or their hybrids and a small percentage of the more resistant Japanese chestnuts. Unfortunately the killing of the chestnut forest growth and orchards does not result in the self-extermination of the disease, as many of the roots of the killed chestnuts remain alive

and send up sprouts which continue to spread the disease for many years. Consequently chestnut orchardists in the eastern half of this country can expect the blight to be an important factor, though losses

FIG. 41.—A view of an orchard of hairy Chinese chestnuts planted by Doctor Van Fleet at Bell, Md. This species is being crossed with other species of chestnut. Many of the trees in this orchard have never had deep cankers which justified treatment, although the blight has been present in the orchard for the last 12 years

from this diseases may be insignificant in localities where chestnut and chinquapin are not native.

Experience in the department chestnut orchard at Bell, Md., indicates that in orchard practice the blight can be controlled on various strains of the hairy Chinese chestnut, *Castanea mollissima*, (fig. 41)

at a reasonable cost. A simple treatment which has given satisfactory results with this species consists of cutting out every spring the trunk infections which reach into the cambium region and painting the cuts. The majority of the trees do not require the removal of infections every year, while some few trees frequently have deep cankers. In orchards where the blight is being eradicated, much more frequent, careful, and drastic treatment is required. It is important in both the control and the eradication of the blight to keep the trees in vigorous condition. Although the blight can be controlled on the hairy Chinese chestnut, other factors such as the sale price of the nuts and the chestnut weevils, for which there is no satisfactory control at present, must be considered by the prospective orchardist.

Successful inoculations on varieties and species of chinquapins from different parts of the Gulf States and Arkansas show that the blight will eventually spread over the chinquapin area of the South. These shrubs will be a source of infection for orchards considerably outside the range of native American chestnut. As the chestnut blight is carried for long distances in various ways, there is no assurance that even the chestnut orchards of the Pacific coast will remain free from the disease. Orchardists and inspectors in that region should be on the watch for the blight, as young infections can be easily and completely eradicated, whereas older ones can be eradicated only with much greater difficulty.

Ornamental Chestnut Trees

The planted American chestnuts of the Northeast have largely disappeared, and those of the southern Appalachians and the Ohio Valley are doomed. Owners who are dependent upon these trees for shade should take immediate steps to plant resistant chestnuts or other kinds of shade trees to replace the native chestnuts when they die. Many strains of the Japanese and hairy Chinese chestnuts are sufficiently resistant to the blight to be grown as shade trees with very little treatment, whereas others are rather susceptible and require considerable treatment. The natural beauty of these trees, together with their production of edible nuts, makes them very desirable for planting in many situations. A few trees of the hairy Chinese chestnut will supply the farmer's family with sweet nuts.

Most of the chestnut forest growth north of Virginia and east of the Allegheny River has been killed by the blight, and that of the southern Appalachians and Ohio Valley will be destroyed in the near future. As shown by Figure 42, the blight is now present throughout most of the range of the commercial chestnut. It is spreading more rapidly in the South than it did in the North, and already over one-fifth of the chestnut stands of the southern Appalachians are 80 per cent or more infected. Forecasts based upon the present distribution of the disease and its past rate of spread indicate that the major part of the remaining chestnut trees will be infected or killed by 1930. As the distribution and spread of the blight are somewhat irregular, each owner must watch his stand in order to determine the amount of infection in it.

Owners should make plans to utilize their chestnut poles before they are killed by blight, because killed poles will usually not be accepted by purchasers. Very severe financial losses have been suffered by many owners of standing poles, who failed to cut them before they were killed. Chestnut trees suitable for lumber should preferably be cut before they are killed, although such trees are not so much reduced in value as dead poles. To a limited extent chestnut which has been dead for many years has been utilized for making tannin extract, but the yield of extract from a given area is much reduced by the loss of sapwood and partial decay of the heartwood.

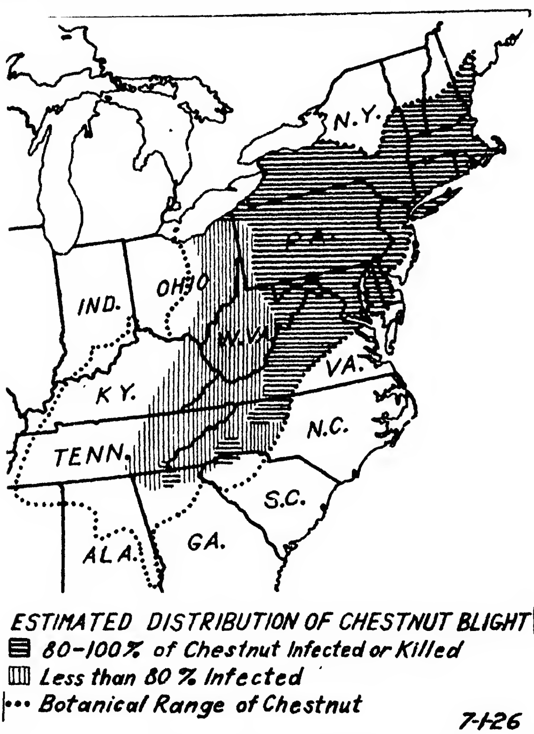

FIG. 42.—Map showing distribution of the chestnut blight. In the eastern part of the heavily infected zone nearly all of the trees are dead, while on the western edge of this zone most of the trees though infected are alive. In the zone shown as less than 80 per cent infected, the percentage of infected trees ranges from less than 1 to 80

Future for Tanning Unpromising

The future of the American chestnut as a source of tanning supplies is not promising. In regions where the blight has been present for many years some trees, which are much more resistant to the disease than the general average, have been located, but still more resistant trees must be found before it will be possible to recommend their planting.

The hairy Chinese chestnut, however, has possibilities as a source of tannin because of its resistance to blight and its high tannin content. Analyses of this species made by the Bureau of Chemistry and chestnut-extract companies show that its tannin content is higher than that of the American chestnut. However, the growth of this tree in China and in a few plantations in this country indicates that it is not so good a forest tree as the American chestnut.

Although America produces an excess of many farm products, it at present imports annually approximately 25,000,000 pounds of chestnuts as the domestic production from chestnut orchards is very small. This country also imports about one-half of the vegetable tannin supplies used in making leather, and with the passing of the American chestnut, whose wood yields approximately one-half of our domestic production of tanning materials, the United States will

probably be dependent upon foreign countries for 75 per cent of its vegetable tanning supplies. In France the growers of chestnut not only receive a material income from the nuts, but also sell the mature trees and the trees removed in thinning to the tanning-extract companies. Such a combination may in the future prove profitable in this country since the hairy Chinese chestnut, which is not so prolific in nut production as the European chestnut, has a higher tannin content.

G. F. GRAVATT.

CHESTNUT Blighted Wood Good for All Timber Uses The chestnut blight has robbed northeastern forests and wood lots of one of our best all-around timber trees, and is sweeping relentlessly southward through all the Atlantic States. In a comparatively few years chestnut will be gone entirely from our eastern woodlands. What can the woods owner with chestnut trees a part of his timber crop do about it?

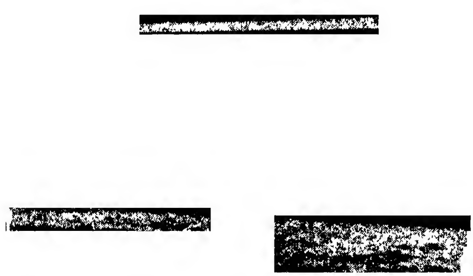

FIG. 43.—Getting the good of a doomed species. This fence, constructed in part of blight-killed chestnut, has for 14 years given testimony to the soundness of this wood

The living tree can not be saved, but the valuable wood can. The blight itself does not affect in any way the strength of chestnut wood. If the wood is harvested before fungi and worms attack the dead tree, the timber is as good for all purposes as any ever cut from a thrifty, unblighted chestnut. However, if this timber, living or dead, is to be saved, it must all be cut and used in the next 15 years.

Even where the blight has not yet entered, the chestnut in farm woods and larger tracts should be disposed of at the first opportunity, regardless of whether the trees are at full maturity. Where the blight has entered, some knowledge is needed of the uses to which the wood may be put, according to the degree that the wood has been attacked by wood-destroying organisms. These uses may be summarized as follows:

Sound wood, trees two years dead or less.—Use for round products, as poles, piling, construction timbers, mine timbers, highway and

railway round fence posts, hewed ties, and all the uses that follow where sapwood is not objectionable.

Sapwood decayed but heartwood sound, trees dead two to four years.—Use for sawed products, as box and yard lumber, mill products, coffins and caskets, furniture, core stock (veneer), cabinet work, woodenware novelties, and slack cooperage. Where lumber is to be kiln dried, there is no fear that decay will spread, for this process sterilizes the lumber effectually.

Sapwood decayed and heartwood checked but fairly sound, trees four to six years dead. Tannin wood, pulp wood, farm fence posts. lumber or timbers for temporary construction. Wood less sound can be used for fuel. This class of material should never be supplied for the purposes listed in the preceding paragraphs. Where this has been done it has in some regions brought about an embargo on all chestnut.

Chestnut constitutes about 25 per cent of the woods and forests on 33,000,000 acres in the Appalachian region, and represents in merchantable timber fifteen to twenty billion board feet. To utilize this timber before it is destroyed is a national obligation. To delay doing so will in many instances result in a considerable loss to the owner.

R. D. Garver.

CHINESE Jujube in Southwestern United States The Chinese jujube (*Ziziphus jujuba*) has been grown in northern China since ancient times. It is one of the five principal fruits of that country, and many excellent varieties have been developed by the Chinese. The tree is deciduous, rather small, and somewhat spiny, with firm, shining-green, oval or oblong leaves 1 to 3 inches long. (Fig. 44.) The fruit is a drupe, elliptic or oblong, up to about 2 inches long, with a thin dark-brown skin, and crisp, whitish flesh of sweet, agreeable flavor, inclosing a hard two-celled point stone. (Fig. 45.)

Although a few seedling trees were grown in the United States as early as about 1837, it was not until Frank N. Meyer, agricultural explorer, visited China in 1908 that scions of large-fruited varieties were introduced. As a result of Meyer's work there are now established in California and the Southwest a number of the best and largest-fruited forms of the jujube.

The fruiting of these varieties in this country has stimulated interest among fruit growers and others, especially in Texas and California, and there is an ever-increasing demand not only for propagating material, but also for information concerning culture and utilization of the fruits.

The tree has withstood successfully temperatures as low as —22° F., and as high as 120°. It reaches its best development where the weather is dry, the sunshine brilliant, the nights warm, and the summers long and hot. Large areas of the southwestern United States, therefore, are well adapted to jujube culture. Because of its habit of late flowering, the jujube is free from injury by spring frosts and bears regularly and abundantly. In respect to soil requirements, the jujube has shown that it thrives in sandy alkaline soil and also in

heavy nonalkaline soils, but the best results are obtained on sandy loams and lighter soils.

Varieties of the Jujube

Of the many different varieties introduced by Meyer from China, four have been selected as being distinctly superior to all the others.

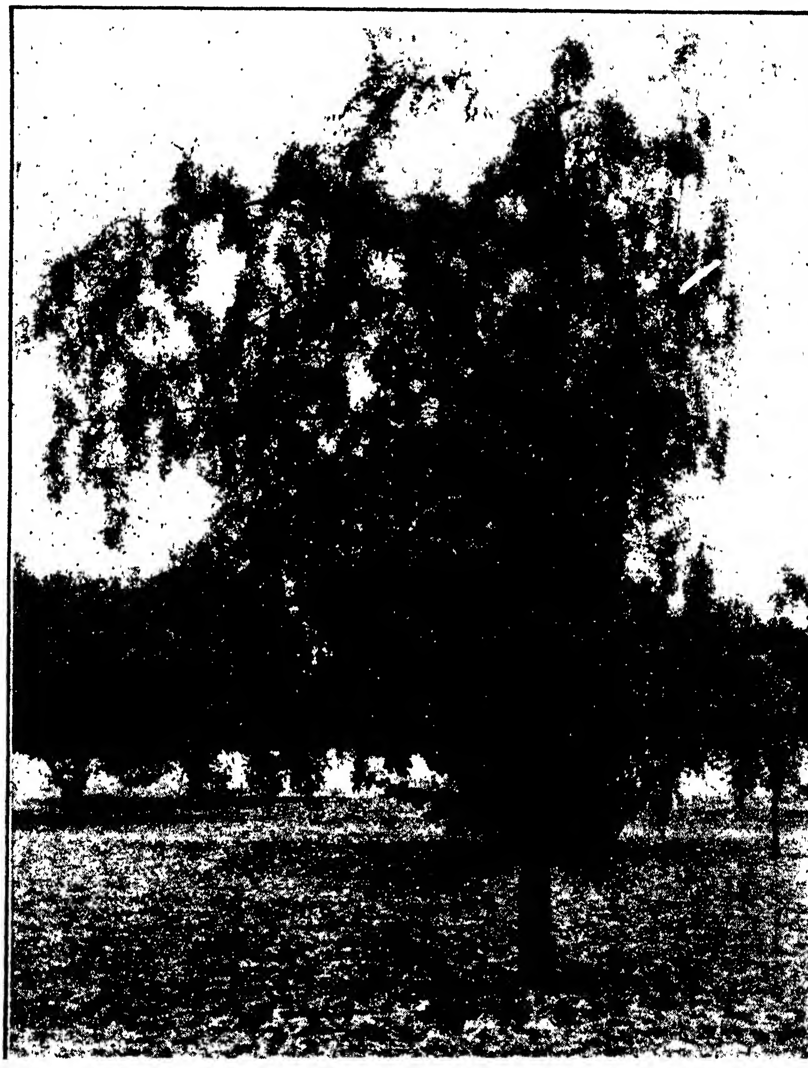

FIG. 44.—Fruiting tree of the jujube at the plant introduction garden, Chico, Calif. This tree is about 18 years old and is a heavy bearer

These are the Mu Shing Hong (S. P. I. No. 22684), the Lang (S. P. I. No. 22686), the Sui Men (S. P. I. No. 38245), and the Li (S. P. I. No. 38249). These varietal names are the ones sent in by Meyer with his notes. The largest of these is the Li, whose rounded-oval fruits are sometimes 2 inches long and nearly that much in diameter.

The Li also has the smallest pit, considered in relation to the amount of flesh. For general purposes, it is probable that the Lang is the best variety. Its pear-shaped fruits are produced in abundance and

FIG. 45.—Fruits of the Li jujube (S. P. I. No. 38249) grown at the plant introduction garden, Chico, Calif. This variety has the largest fruits of any grown in the United States, has a relatively small stone, and processes well

are easily processed in sirup. This variety is also one of the most readily propagated. Although these are considered the best varieties at present, there are several others which may prove to offer particular advantages after further trials.

The jujube is used in several ways. It may be eaten fresh or the dried fruits may be ground and added to bread or cake as a seasoning, or used to make a mock mincemeat. The fresh fruits may be made into a jujube butter. Excellent sweet pickles may be made from the skinned whole fruits. The most satisfactory method to utilize the fruits, however, is as a confection. The skin is punctured or scored in some manner and boiled in sirup, the scoring allowing the sirup to penetrate the fruit easily. This scoring may be done with old safety-razor blades held together by bolts with thin pieces of cardboard between the blades. Or a board may be driven full of nails with the points barely projecting from one side, and the fruits punctured by rolling over the points.

How Sirup is Made

The sirup is made by using 1 or 2 parts of sugar to 1 of water, according to taste, the lighter sirup allowing more of the fruit flavor to be retained. The perforated fruits are then placed in the sirup and boiled from 20 to 35 minutes, the larger fruits requiring the longer boiling. The fruits are then allowed to cool in the sirup, after which they are boiled again for the same length of time. Then the fruits are taken out and allowed to dry on trays, either in the sun or by artificial means. Drying should be carried to a point where the fruits are firm, but not too hard.

The jujube compares very favorably with the fig in point of edible matter, total sugars, acid, and ash, and contains more protein than the date. It is therefore of high food value.

The immediate future of the jujube is in its culture as a home fruit, and as such it should appeal to growers and residents generally in the drier portions of the Southern and Western States.

C. C. THOMAS.

CHINESE Elm in American Horticulture

Among the many valuable contributions of northern China to American horticulture the Chinese elm (*Ulmus pumila*) stands out as one likely to prove of increasing value to certain sections of the United States. First introduced in 1908 by Frank N. Meyer, agricultural explorer, from near Peking, Chihli, China, the tree is established in a number of places in this country, and seeds and plants are offered for sale by several nurseries in the South and West.

It is a rapid grower, with slender, almost wiry branches. The leaves are elliptical and smaller than those of the American elm. If allowed to assume its natural habit, the Chinese elm develops numerous branches along its trunk, making a rather dense growth from near the base and resembling in some instances large shrubs. It is one of the first trees to leaf out in the spring and the last to shed its leaves in the fall. Throughout the long season the leaves remain a beautiful green and are remarkably free from the usual plant diseases and insect injuries so common in many of the other elms.

Tree is Very Hardy

It is very hardy and has proved valuable under a greater variety of climatic and soil conditions than any tree yet introduced. Very

favorable reports have been received from practically every section of the country. It has proved winter hardy in most trials in the Dakotas, Minnesota, New York, Montana, and other Northern

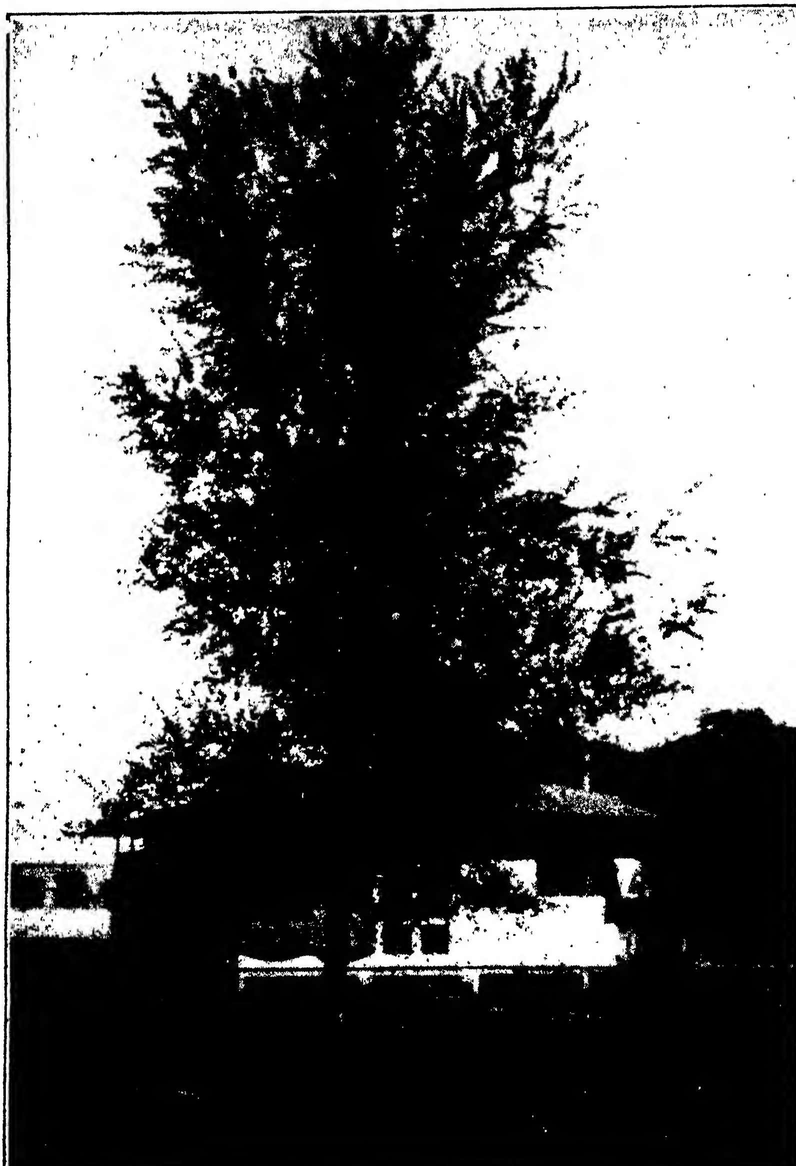

FIG. 46.—A 6-year-old tree of the Chinese elm (*Ulmus pumila*) grown near Yuma, Ariz. One of the few trees which can survive the trying climatic conditions of that region

States. Its resistance to drought, alkali, and extremes of temperature render it an especially valuable tree in the Great Plains region where desirable shade trees are few, in the semiarid South and

Southwest, and in fact in almost any portion of the continental United States. (Fig. 46.)

That this elm is a very rapid grower is shown by the following statement from a planter at Bridgeport, Nebr.: Trees planted May 1, 1918, were reported upon as follows on April 7, 1922: "Trees when received were not over 3 feet high and about the size of a lead pencil. On November 1, 1921, by actual measurement, they were 16 to 19 inches in circumference and from 15 to 25 feet high." A report from the Fort Hays Experiment Station at Hays, Kans., commenting upon a tree received and planted in 1913, gives the following information: "Tree is now 46 feet high and has a trunk 21 inches in diameter." In trials in the eastern United States from New York to Florida it has made a good growth and produced good trees, although in this region they have not made as rapid growth as in the Middle West or Great Plains area.

FIG. 47.—Trees of the Chinese elm trimmed to a formal shape. Photographed at Harbin, Manchuria

Propagation and Uses

This elm can be propagated either from root or stem cuttings, as well as by seeds. The easiest and least expensive method is to use seeds when available from one's own trees or obtainable at a reasonable price. Experience thus far in growing plants from stem cuttings indicates that wood of the new growth taken early in the season is the most reliable and that young root cuttings root readily.

Some of the earlier plantings of this tree in the United States are now producing seeds, so that a domestic supply should soon be available and make importation from China unnecessary. Elm seeds retain their vitality for a short period only and for this reason should be planted shortly after being harvested, when possible. When necessary to keep for some time they should be stored in a way to prevent drying out.

As a shade, windbreak, and avenue tree the Chinese elm has proved to be the most successful introduction of this kind thus far attempted.

A recent report from one of the department's explorers in Manchuria brings out the fact that this tree is used there for hedges 2 to 3 feet high; in some instances being used for screens up to 12 or 15 feet in height. It is also used there for formal plantings, the trunk being trimmed of branches to a height of 6 to 8 feet, with the top portion of the tree trimmed to a conical shape. (Fig. 47.) If the trunk is kept trimmed, this elm will assume a treelike habit and make a splendid shade or avenue tree. Its natural habit of growth also makes it valuable as a windbreak. C. C. THOMAS.

CHINESE Dwarf Meyer Lemon Introduced In March of 1908, Frank N. Meyer, agricultural explorer of the Department of Agriculture, while traveling in the vicinity of Peking, China, observed a lemon that was used as a house plant and was regarded very highly by the Chinese. It was grown as an ornamental plant, but the fruit was also considered of excellent quality. Plants of this variety were obtained by Mr. Meyer and carried with him along with other plants on his return to the United States in June, 1908. This was given an "accession number," S. P. I. 23028, and determined as *Citrus limonia* Osbeck. It has since been questioned as to whether or not it may be of hybrid origin, but this is yet to be determined. The varietal name Meyer has been suggested for use in connection with this introduction. Mr. Meyer's note regarding this lemon was as follows:

(No. 690, March 31, 1908) From Fengtai, near Peking, Chihli, China. Ornamental lemon. This lemon is grown as a pot plant when dwarfed, and is very much appreciated by the Chinese higher classes as a decorative house plant in winter. At that season a small plant often has a dozen large lemons hanging on its branches and sometimes sells for $10. Protect from frost. Can be slipped in sandy soil in flat pots. Chinese name "Hsien Yuang."

Mr. Meyer landed at San Francisco and took his plants to the department's plant introduction garden at Chico, Calif., in the Sacramento Valley. Here they were grown and propagated for testing in the various citrus areas of this country and for testing as a pot plant farther north. It has been observed at Chico that the plants can be propagated readily from cutting as Mr. Meyer indicated and that they are much more winter hardy than ordinary commercial lemons. It was not killed by a temperature of 13° F. at the Chico plant introduction garden, although the top was killed back severely. A temperature of 24° F. has done no other damage than to discolor some of the leaves.

This lemon is a dwarf-growing plant attaining under favorable circumstances a height of 8 to 10 feet. In general it is a low-growing, bushy plant requiring a space not over 8 feet square. The fruit is slightly larger than that of the Eureka, Lisbon, or other common commercial varieties. It has a very smooth, thin skin, and but little fiber or rag. It is very juicy and mildly acid for a lemon. (Figs. 48 and 49.)

Experience of American Growers

One experimenter in California in December, 1925, reported as follows:

The trees, while slow growing, appear to be hardier than either the Lisbon or Eureka. Occupying the same situation in my orchard as these varieties,

they (the Eureka and Lisbon) lost a few leaves during the extreme cold of a year ago, but the trees of Meyer lemon did not suffer any injury to either leaves or tender terminal growth. They fruited the second year from planting and have proved very heavy bearers. The fruit has fewer seeds than either the Lisbon or Eureka, has a smooth, glovelike skin; the center of the fruit is entirely lacking in fibrous growth, carries considerably more juice than any lemon grown by me (I have seven varieties) and we prefer it to any for household use.

An experimenter in Florida reported in the spring of 1926 as follows:

During December of 1925 we had temperatures of 24°, 22°, and 16° F. The plant was partly defoliated at 16° F., but suffered not at all from the other

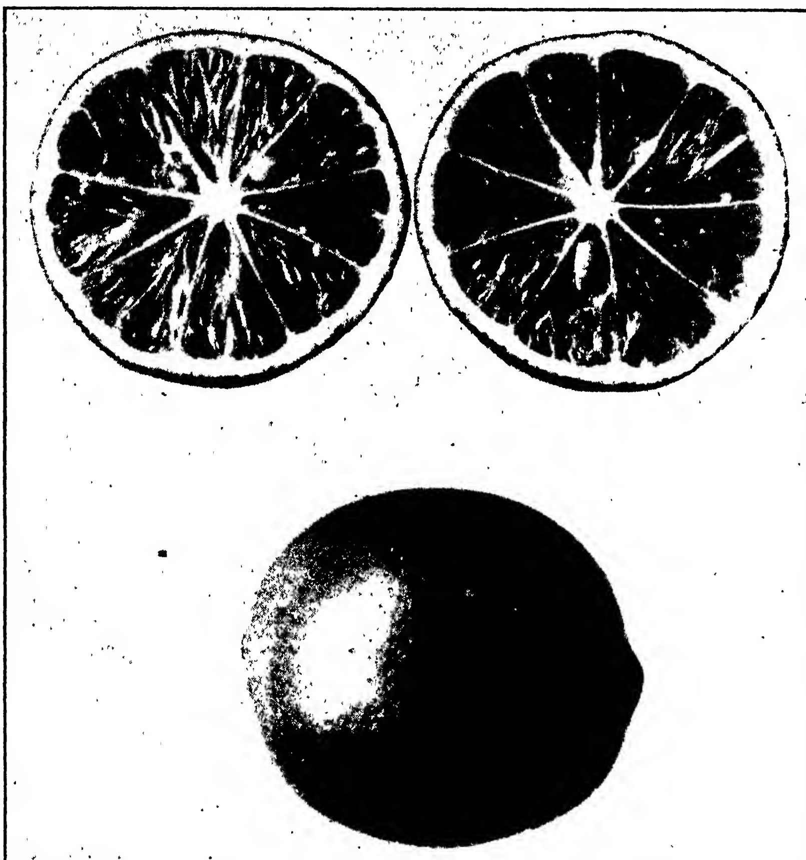

FIG. 48.—Fruits of the Meyer lemon (S. P. I. No. 23028) grown at Oroville, Calif., in 1925

temperatures. All growth appears to be unhurt and we believe it will prove only slightly less hardy than the Satsuma.

The department has but little exact information regarding yield of fruit, but general observation and reports indicate it as producing well. An experimenter in California reported in December, 1925, as follows:

I planted my tree out-of-doors in the lawn five years ago. The second year after planting it produced 7 fruits, the third year 111 fruits, the fourth year

138 fruits, and this year 25. In 1924 it overproduced and then the frost killed most of the leaves, resulting in a lighter crop this year (1925).

FIG. 49.—Fruiting branch of the Meyer lemon (S. P. I. No. 23028) photographed at the plant introduction garden, Brooksville, Fla.

Heavy Bearing Tree in Texas

At Brownsville, Tex., a tree 6 feet high bore 132 lemons in 1920 and 240 in 1921; these averaged 8 ounces in weight. At Irvington, Ala., a tree planted in 1918 was reported to have borne several

hundred fruits in 1921 and about 1,000 fruits in 1923. However, this same tree died during the cold winter of 1923–24.

The best stock for this lemon has not been determined. Some have reported good results when worked on sour-orange stock, and others unfavorable. It has also been worked on *Poncirus trifoliata*, grapefruit, and mandarin, with opinions varying regarding the relative value of these as stocks. However, since it roots readily from cuttings it perhaps may be safest, until otherwise demonstrated, to grow it on its own roots.

This seems to be a fruit of special value for home use in areas where it can be grown in the open, and it also may have value as a commercial fruit in locations too cool for other varieties to succeed.

ROLAND MCKEE.

CHRYSANTHEMUMS for the Northern United States

The charm and beauty which the hardy chrysanthemums add to the landscape of the South during late fall could, it is believed, be extended to the northern garden if early-flowering sorts with sufficient hardiness to withstand the rigorous winters of the region can be developed. There are many sorts the roots of which are hardy but because they flower so late contribute little to the floral display of autumn at the North, save in the exceptional season. If these hardy forms can be induced to bloom earlier in the season and at the same time provide flowers of desirable form and color, the approach of winter may be delayed so far as the garden is concerned; for the early frosts which are so destructive to most of the annuals are, as a rule, much less harmful to the hardy chrysanthemums.

The variety of form, the diversity of color, and the wide range in the time of blooming observed in the seedlings of hardy "mums" led to the conviction that this plant might be induced to make a contribution to northern gardens as well as southern gardens.

Some Bloomed Early

Accordingly, a collection of the earliest blooming sorts to be found in both English and American gardens was brought together for observation and test and to it was added a number of department-grown seedlings considered too early for satisfactory greenhouse culture. The first year a few sorts bloomed as early as the middle of August, but the great majority maintained their ancestral characteristics and refrained from blooming until the first days of November, too late to make any marked contribution to the fall garden, even in the latitude of Washington. The early-blooming plants were carefully marked and were left in the open to take the consequences of the winter. Several survived, and in 1916 seed was gathered from 10 of the earliest flowering, winter hardy sorts. From the seedlings grown from this selection and the original collection, seed was again saved from the 10 earliest bloomers in 1918 and this was repeated again in 1919. By 1922 the collection of selected, winter hardy, early-blooming parent plants had grown to 75. From these parents 13,000

seedlings were grown in 1923 and 125 of them were selected for further trial. In 1924, over 10,000 seedlings were grown from specially selected plants and of these 100 were considered early enough to be parent plants. Through further trial and elimination it is planned to reduce the list of selections to a group of 12 or 15 sorts that will bloom and give a satisfactory range of color and form for use during the first half of September and a like collection which will produce the bulk of their bloom during the last two weeks of September.

Task Beset With Difficulties

This task has been beset with many difficulties. The July and August flowering varieties are manifestly too early for garden or commercial use but as parents for early-flowering strains they are proving invaluable. Seedling chrysanthemums like other hybrid forms present every possible expression of form and color. In this respect the plant is interesting to work with. In fact a field of seedling chrysanthemums presents a most attractive mosaic when the plants are spaced $1\frac{1}{2}$ by 3 feet and each plant develops to occupy the space allotted it. Besides adding an attractive feature to the trial grounds each fall the work has resulted in the development of early-blooming sorts including a wide range of form and color.

As soon as satisfactory forms of these chrysanthemums are selected the next task will be to multiply them. This will be done to such an extent as to make them available, through the trade, to the gardeners of the North who wish to prolong the floral display of the autumn.

FURMAN LLOYD MULFORD.

CELERY Disease and Its Control

The black-heart disease of celery is found in its most prevalent and destructive forms in Florida and California, two of the largest celery-growing districts in the United States, in both of which artificial irrigation is used extensively. The irrigation is important, as it will appear later that proper irrigation is the only satisfactory method for the control of the disease. The disease, most destructive in Florida because of the heavy rainfall during March and April following several months of drought, has been known since the early commercial culture of celery. Since, until recently, there were no methods for the control of black heart, the growers have lost heavily from it every year.

The disease attacks principally the tender growing heart of the plant, producing a blackening of the tissues, and hence the common name "black heart." As the disease develops, the entire heart is killed by a typical dry rot, which is often followed by a slimy soft rot, caused by secondary organisms of the *Bacillus carotovorus* group. The malady is nonparasitic in nature and is not to be confused with the common heart rot found mainly in the northeastern United States. The black heart causes a yellowing of the entire leafy portion of the plant, with a loss of the green color, followed by a browning and death of the tissues involved. The diseased plants are worthless and many fields in Florida have been observed in which all the plants were affected.

For many years the celery growers in Florida and a number of experimental workers thought the disease was caused by improper fertilization. In 1906, R. Y. Winters, conducting preliminary fertilizer experiments in the Sanford section, came to the conclusion that the disease was caused by the excessive applications of kainit and nitrate of soda. He also thought that other adverse conditions for plant growth, such as unbalanced water relations, improper mixing of fertilizer, and the attack of the plants by blights, were favorable to the occurrence of the disease, but he had no experimental data to support these general conclusions.

The writer conducted fertilizer experiments with celery in the Sanford section over a period of five years, using over 60 different fertilizer combinations—the ammonia, potash, and phosphate being derived from as many different sources as possible. Nitrate of soda was applied to one plot at the excessive rate of 1 ton to the acre. Other forms of ammonia and potash were applied in the same manner and there was not a single instance in which the disease appeared that would indicate that fertilizer from different sources had any relation to the disease. On the other hand, the disease was readily produced under field conditions by allowing the soil to become excessively dry and then flooding. After such treatment the disease would appear within 48 hours. It was also produced by removing healthy plants from the soil and placing them in jars of water over night.

Difference in Susceptibility

A considerable difference in the susceptibility of certain varieties to black heart was found. Of all those tested the Old Golden strain proved to be the most susceptible and Meisch's Wonderful or Special strains the most resistant to the disease.

Celery black heart has been controlled experimentally and in a practical way by Florida growers by first selecting a strain of celery that is highly resistant to the disease, and then carefully regulating the supply of water throughout the growing period of the plants. Celery is a water-loving plant, but it will not stand excessive flooding, especially if it has been stunted during growth. It is necessary, however, to harvest the crop before it has reached maturity, as mature plants are very susceptible to the disease if other unfavorable conditions occur.

Arthur C. Foster.

CITRANGES and Some Related Hybrid Fruits

The breeding of cold-resistant citrus fruits suitable for culture in the southern part of the Cotton Belt has been in progress for many years. A large group of hybrids known as "citranges" were first produced by crossing the commercially worthless trifoliate orange of Japan with the ordinary sweet orange. The citranges are unlike either parent, and serve chiefly as hardy substitutes for the lemon. The Rusk citrange has been more widely distributed than the others, its prolific nature, evergreen habit, and handsome appearance, especially when carrying a full crop of bright orange-red fruits, giving it value as an ornamental in addition to its fruits.

In 1909, crosses were made between the citrange and kumquat, resulting in the creation of the citrangequat. Of these, the best known is the Thomasville, a tree of compact, upright habit, evergreen, and which starts bearing at an early age, carrying its fruit from late summer into the winter months. These fruits resemble in shape a large oval kumquat, but have an acid, limelike juice, making them excellent for marmalade, preserves, and ade. The gooseneck fruit spur and clawlike calyx points (fig. 50) are unique characters which make the fruit easy to identify. The citrangequat inherits the kumquat's habit of sustained winter dormancy, with resulting

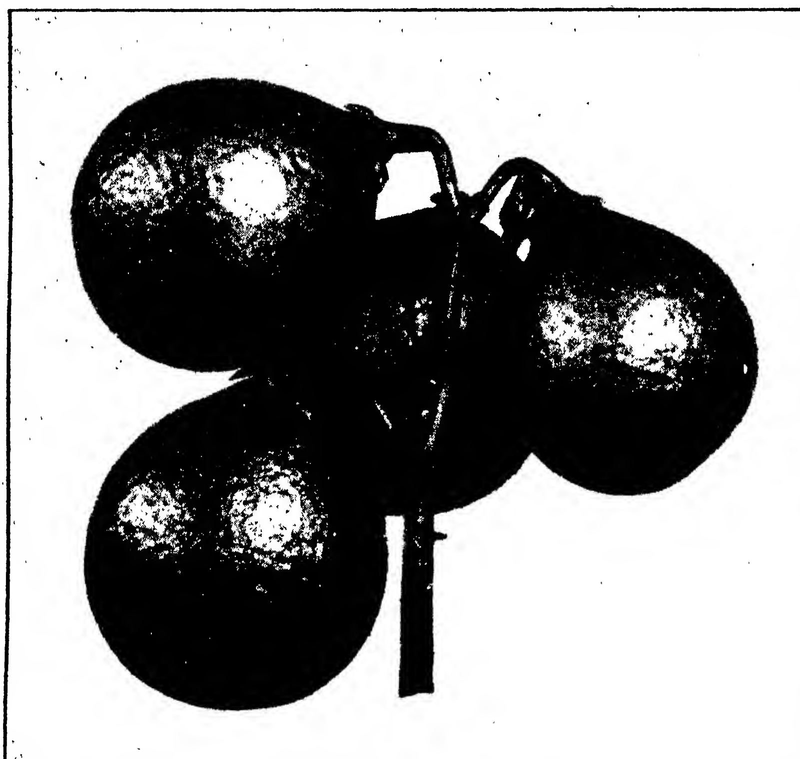

FIG. 50.—Fruits of the Thomasville citrangequat. The gooseneck stem attachment and clawlike calyx points are characteristic of this hybrid

hardiness, and so may be grown in regions much too cold for ordinary citrus varieties. It has, too, the unique immunity to citrus canker possessed by its kumquat parent, and so meets the need for a home-grown fruit that will not help in spreading this most serious of all citrus diseases should there be another infestation in the Gulf States.

Trifoliate Orange Valuable

The trifoliate orange, while worthless for fruit production, is an important rootstock for citrus, especially the Satsuma orange. It has a number of serious disadvantages, however, since it is susceptible to citrus canker, fails to grow in very light sandy soils or the black

waxy and heavy silt soils of southern Texas, and dies at the root when the budded top happens to be killed by a severe freeze such as sometimes visits the Gulf coast region. The Rusk citrange and Thomasville citrangequat, on the other hand, produce vigorous sprouts from the old roots after a freeze and the trees may be rebudded and a grove reestablished in two or three years. Both show, in budding experiments, a perfect compatibility with the Satsuma orange, and buds grow readily on these stocks. Both are sufficiently hardy to be proof against cold injury in the Gulf States and have a wide range of adaptability to soils not suited to the trifoliate orange. The quality of fruit thus far produced on these stocks is in no way inferior to that grown on the trifoliate.

Both the Rusk and Thomasville, however, produce few seed, so that although they come true to seed their rapid propagation is something of a problem. This problem has apparently been solved by the discovery that cuttings may be rooted in a "solar propagating frame"—a rooting bed using sunlight for bottom heat. Fine twig cuttings with leaves attached may be rooted in six to eight weeks and the root systems so developed are in no way inferior to those of seedling plants. The use of cuttings, furthermore, insures a uniformity not possible with seedlings, while the saving of time as compared with planting seed will more than offset the expense and trouble of rooting the cuttings. Field tests of these stocks are being made, though it will require a few seasons before all factors that enter into their successful commercial use can be determined with certainty.

WALTER T. SWINGLE.
T. RALPH ROBINSON.

CITRUS Aphid— A New Pest in Florida During the last three years there has occurred in Florida a violent outbreak of an aphid pest quite new to citrus orchards. Epidemics of this kind are not unknown to students of aphids, but in the history of citrus culture in Florida such an event is unique, and the rapidity with which the insect multiplied was observed with dismay by the growers of citrus fruits. Special meetings were held to discuss the situation, an emergency appropriation was made available to State workers, and the department undertook intensive studies centering in its Orlando laboratory.

The outbreak had its inception in the vicinity of Tampa, where there are extensive plantings of favored varieties. By the spring of 1924 the aphids were mutiplying by the millions and sweeping eastward through the citrus belt. Under optimum conditions not only was the foliage heavily curled, but branches and trunks were green, as if painted, with a crawling mass of aphids.

The insect had never been recorded on citrus trees. Its identity was unknown. Its origin and probable future therefore remained problematical. As far as could be determined it resembled most closely a species called *Aphis spiraecola*, known only on spirea in more northern latitudes. Transfer tests from spirea to citrus and from citrus to spirea and a study of the offspring on these plants proved the two to be identical. The spirea aphid of the North was running wild on citrus in the South.

This gave the first clue. Entomologists know that, viewed biologically, there are two kinds of aphids. One kind finds its optimum conditions in very hot dry weather; the other multiplies most rapidly in moist cool weather. It was believed that the aphid on spirea belonged to the latter class. It was known also that an outbreak demands two things—an abundant host or food supply and a physical environment optimum for the pest but depressing to its natural controls. A study of the climatic conditions in the citrus belt over a series of years as compared with the conditions immediately preceding the outbreak was therefore undertaken.

Climatic Cause Indicated

It was found that preceding the outbreak there were warm winters and cool moist weather during the time the trees were coming into flush. The records, therefore, gave the picture of a typical epidemic due to unusual climatic influences. It was believed that a return to warm, dry, spring weather would change the situation as follows: The new growth would shoot rapidly and harden quickly, thus reducing the food supply. The reproduction rate of the aphid would be lowered. The insect parasites and predators would be given a chance to multiply rapidly. And with the warm summer rains disease-producing organisms would attack the depleted and weakened aphid population.

The usual epidemic history was therefore predicted—a rise and rapid spread to a maximum infestation followed by a gradual decline to a point at which the insect would be a relatively minor factor. Very little was known with assurance. No outbreak of this kind had been studied in a quantitative way. Existing information was vague and generalized.

Two problems therefore presented themselves. (1) There was needed a satisfactory artificial control to protect the trees during the progress of the epidemic, and (2) it was important to obtain definite information on the factors at work during the growth and decline of the outbreak.

The first need was met, in part at least, by the development of aphid sprays and dusts and by fumigation, this last method being sponsored by State workers. It was found, especially as the epidemic began to decline, that protection was needed only while the new growth was in a succulent condition, but that treatment at this time must be repeated and thorough if the infestation was at all severe.

More Complicated Problem

The second problem was more complicated. It concerned numerical records, not only regarding the insect itself but with respect to all the agencies involved in the increase or reduction of the aphid population. The task was a large one. By a sort of mutual understanding the State workers took up the study of the insect itself, while the Federal workers gave special attention to the interrelation and importance of the various agencies involved.

This latter study led to some unexpected records. A minor point will illustrate. In a large number of the younger groves the trees were found to contain many spider webs. Even the smaller webs

captured many hundreds of winged aphids. Each winged aphid was the potential mother of many young. Moreover, each was a migratory form capable of carrying the infestation to new foliage. A determination of the average number and size of webs per tree and the average number of aphids per web, together with the rates of reproduction and normal mortality, gave a figure showing that things as far removed from citrus culture as spider webs had a definite influence on reducing the infestation.

This study of the epidemic as a whole is still under way. The results to date, however, would make too long a story to tell here. But when the outbreak of the citrus aphid passes into history, as it is now slowly passing, the data accumulated will enable us to understand better, to predict more accurately, and to control more effectively the course of similar epidemics in the future.

A. C. Baker.

CLOTHING Expenditures of Farm Families If the question were asked as to whether farm families spend as much on clothing as city families the answer would probably be a firm and emphatic "No." For the idea has been commonly accepted that the farmer puts much less of his hard-earned cash on his back than does the city dweller. Some facts are now at hand by which this opinion can be checked up. The Bureau of Home Economics has recently made a study of clothing expenditures during one year of 1,337 farm families in four States. These figures show, when compared with similar figures for city families, that there is little difference after all in the amount spent for clothing by farm and city families except for those having relatively large incomes.

The average clothing expenditure of 1,337 farm families for a year ended in 1923–24 was $225. This was 14.4 per cent of the average expenditure of $1,559 for all items of the family living, including the rent, food, and fuel furnished by the farm. City families with about the same total expenditure spent on the average $238 for clothing, according to a study made in 1918–19 by the United States Bureau of Labor Statistics of 12,096 families in industrial centers throughout the country. This difference in clothing expenditure of $13 is certainly not large. Moreover, clothing cost more and took a larger share of the family income in 1918 than in 1923 when the farm study was made.

Same Comparison on Lower Incomes

And the figures for families of less than average income tell the same story. It is only in families having incomes well above the average that a significant difference in clothing expenditures of city and farm families appears. With a total expenditure of about $3,000, for example, the farm families spent $476 or 15.8 per cent for clothing, while the figures for city families jump to about $500, or 16.7 per cent.

The city wife spends slightly more on clothing than the farm wife. A comparison between the clothing expenditure of husbands and wives, except in the higher-income groups, shows that the city hus-

band in the 12,096 families studied by the Bureau of Labor Statistics, purchases more clothing than his wife, whereas the farm wife averages a higher clothing expenditure than her husband except in the families that spend less than $1,200 a year for all their living. However the farm wife spends less, on the average, than her husband from the time she is 35 until she is 50 years of age. During this period the children are demanding an increasing share of the family income, and the wife's clothing allowance is reduced to meet the situation. The husband's clothing expenditures are also curtailed, but not to the extent that the wife's are.

With an increase in the family income the wife immediately begins to expand in her clothing purchases, buying, probably more and better garments than before. On the average her annual clothing expenses increase between $4.50 and $5 for every $100 increase in the total family expenditure. Her husband's clothing expenses do not increase so rapidly with the increased welfare of the family. In the families with total expenditures of less than $1,800, the husband's clothing expenditure increases about $4 with every $100 increase in the total family expenditure. In families, however, that spend more than $1,800 on all their living the husband's clothing allowance increases on the average only $1.36. The clothing expenditure of the husband is less affected by changes in the size of the family or in the income than is that of his wife.

Girls Spend More Than Boys

The clothing demands of the men and boys in families that spend less than $1,200 on their living are more adequately met than those of the women and girls. The men and boys spend more money on clothing at every age except between the years of 18 and 22. As the income increases, however, the girls spend more on clothing than the boys, except during the years of 3 to 8 when the boy's clothing amounts to more than the girl's. At 19 years of age in all income levels the daughter's clothing costs more than that of any other member of her family, and, on the average, more than it will ever cost again unless fortune places her in a higher income group. In such an event her clothing expenditures will of course increase. The son does not reach his maximum clothing expenditure until he is 21 years old. Then it does not amount to as much as that of his 19-year-old sister, but it is more than he will ever spend again if he is a part of an "average" family, and the total family expenditure remains approximately the same.

Expenditures Higher on Outer Garments

The way in which the clothing allowance is divided among the different articles of clothing changes as the children grow older, or as more money is spent on clothing. The proportion of the total clothing costs spent on headwear and outer garments, for example, increases with each older age group, and that allotted to undergarments and footwear decreases correspondingly. In general daughters over 16 years of age spend about 60 per cent of their clothing money on headwear and outer garments, whereas only about 49 per cent of the clothing money for girls under 16 is spent on the same

type of garments. Sons of the same age groups spend a larger proportion of their clothing allowance on headwear and outer garments than the daughters do, averaging approximately 63 per cent for sons over 16 years, and 55 per cent for sons under 16.

With an increase in the clothing allowance boys and girls under 9 years of age spend more in proportion on footwear and undergarments and less on headwear and outer garments. Husbands, also sons over 9 years, devote a larger proportion of their allowance to outer garments with each increase in the clothing allowance, whereas daughters between 9 and 21 years of age spend a decreasing percentage on outer garments, and an increasing proportion on undergarments. The proportion allotted to footwear decreases alike for both sons and daughters over 9 years of age. Wives and daughters 21 years old and over spend a larger proportion for outer garments and headwear, and a decreasing percentage on undergarments and footwear with each increase in their clothing expenditures.

Clothing represents approximately 15 per cent of the family's total expenditure. It pays, therefore, to devote time, care, and forethought to the purchase of clothing. A clothing budget, especially if worked out on a three-year basis, is a great help in obtaining a more adequate and balanced wardrobe.

EDNA LOUISE CLARK.

CLUBS for Farm Boys and Girls Boys' and girls' 4-H club work is a system of instruction given rural boys and girls by the United States Department of Agriculture and the State agricultural colleges in cooperation with local forces. This instruction is given by means of farm, home, and community demonstrations for the purpose of improving rural practices. Through club work rural boys and girls learn how to work, achieve, and make of themselves efficient, public-spirited, useful citizens.

The term 4-H signifies the four things which must be trained by the boy and girl to insure success in club undertakings—head, heart, health, and hands. The mind, or head, of the boy and girl must be trained to think, plan, and reason, and the heart to be kindly and sympathetic toward the work and toward associates, so that all may work together; the health must be improved and kept good for efficiency and enjoyment; and the hands must be trained to be skillful. The symbol of the 4-H club is the four-leaf clover containing an H on each leaflet, the clover signifying the purpose for which the first clubs were created—soil conservation.

The extent to which 4-H club work reaches farm boys and girls may be appreciated by the fact that in the United States during 1925 a total of 565,046 club members, between 10 and 21 years of age, were enrolled. These young people carried on a total of 1,079,604 club projects in agriculture and home making. They were organized for the most part into 41,000 local groups or clubs, each with an adult leader. There were about 48,000 such local leaders who supervised the activities of the boys and girls in these clubs. The work of the club members and their local leaders was directed by 2,925 county extension agents in the counties following plans outlined by the State club leaders.

FIG. 51.—Henry Latson, Michigan farm boy, and successful dairy-club member, who is now joint owner with his father of a modern dairy farm

Many Demonstrations Given

Demonstrations in food, clothing, poultry, farm crops, livestock, and the like were conducted on the farms and in the homes by rural boys and girls. In their home surroundings the 4-H club members have demonstrated to their neighborhoods the desirability of following certain better practices in agriculture and home making. The achievements of these farm boys and girls have been substantial as the records of their accomplishments show.

FIG. 52.—Helen Brown, Washington farm girl and poultry-club member, who became a poultry authority in her neighborhood and financed part of her college education through her poultry flock

The two examples following are typical of the work and influence of club members. Henry Latson of Michigan made his club activities fit into the work on his father's farm. The calf of which he became owner was the first pure-

bred animal on the farm. Through successive years, his demonstrations proved the desirability of dairying in his neighborhood, with the result that the dairy farm now owned by father and son is but one of the many fine dairy farms in that section.

Helen Brown of Washington became the poultry authority in her neighborhood through her club demonstration. She perfected the business side of her work so that her profits assisted materially in financing her college course.

One of the more recent developments in extension work with farm boys and girls has been the "young farmers' clubs" in which the older rural young people have been interested. Thus 4-H club work has provided the incentive for farm young folks in a community to maintain their contact with extension work until they are sufficiently mature to affiliate with its adult organization.

Eleven Million Farm Boys and Girls

According to the census of 1920, there are more than 11,000,000 rural boys and girls in the United States. One of the important functions of the agricultural colleges and the United States Department of Agriculture in their cooperative extension work is to teach these rural boys and girls some of the inspiring things in agriculture, give them some vision of its possibilities as a life job, to assist them in the actual carrying on of a farm or home-making project in which they have particular interest, and to help them learn how to assume their part in solving their community problems.

R. A. Turner.

COLLOIDS and Soil Behavior Possibilities

One may spend his lifetime cultivating a soil and then die ignorant of how it will behave under many conditions. The soil expert aims to find out more with less work. He is trying to find out exactly how a soil will behave under different treatments by examining it in the field and in the laboratory. His purpose is a degree nearer achievement as the result of recent studies of the clay or colloidal material in soils. New facts regarding the nature of this material and its relation to properties of the whole soil have been discovered. By taking these facts into consideration the soil expert will form a better judgment than he has hitherto regarding the behavior of soils under different conditions.

Studies show that the very fine or clay material in soils is made up of particles which are much smaller than had been supposed. One ounce of a heavy loam soil may contain 10 billion millions of such particles. Luckily these particles stick together. If they did not, clay soils would have washed away years ago. This clay material is now coming to be called "colloidal material," since it is found to be related to a group of other sticky materials, including glue, which are known by chemists as colloids.

Colloids Governing Factor

Many properties of the whole soil, such as stickiness, retention of water, and capacity for holding plant food, are governed almost exclusively by the colloidal material. Obviously then, in judging

how a soil will behave it is important to know how much colloidal material it contains. But a determination of the mere quantity of colloid is not sufficient; the kind of colloid must also be determined, since different soils may contain colloids which are very different in character. Because of differences in the kind of colloidal material present some soils that contain a high percentage of colloid hold less water and plant food and are more friable than other soils containing less colloidal material.

It now seems that if both the quantity and kind of colloidal material in a soil are known it should be possible to predict fairly well how the soil will behave. Although the larger soil grains influence certain soil properties, it is not much exaggeration to say that a soil is known by the colloid it contains.

P. L. Gile.

COMBINE Harvesters in the Great Plains Use of the combine-harvester in the Great Plains has increased very rapidly during the past five years. Only a few machines were being tried in 1918 or 1919, but with improvements in the mechanical features of the small combine the machines rapidly increased in popularity. A great many machines were sold in 1925 and 1926 and in some localities in the area practically all of the 1926 wheat crop was harvested with the combine.

The development of the small, prairie type harvester-thresher has given the farmer of the Great Plains a practical machine which enables him to complete his harvest and threshing rapidly, with a comparatively small amount of labor. A machine having a 15 or 16 foot width of cut, pulled by a 15 horsepower tractor and operated by 2 or 3 men exclusive of grain haulers is capable of harvesting 400 to 600 acres during a reasonably dry season. A machine of this type should cut and thresh 500 acres in 15 days of actual cutting.

A smaller machine having a width of cut of 8 or 10 feet, designed for operation by a single man, is capable of handling 250 to 300 acres in 15 days. With the introduction of the smaller machines the use of combines is increasing on farms with smaller acreages of grain and on farms where the operators hesitate to make the investment necessary for the purchase of a larger combine.

The labor of harvesting and threshing is reduced from approximately 3 man-hours per acre [3] where a binder is used or 2 hours [3] where a header is used to about 0.75 hour per acre with the combine. The reduction in size of crew enables the operator to do a larger proportion of his harvest work with the labor available on the farm. The operator is relieved of much of the expense and dependence on transient labor during harvest.

A properly adjusted combine will compare favorably with a header in saving grain in the field and in short grain will save a larger proportion of grain than will a binder. With short straw, fewer heads are left on the field and the shattering loss is somewhat reduced. The loss of grain in the threshing operation itself should be no greater than in a stationary thresher, and may be expected to vary between 1 and 2 per cent of the grain threshed.

[3] Grimes, W. E., Hodges, J. A., Nichols, R. D., and Tapp, Jesse W. A study of farm organization in central Kansas. Dept. Bul. 1296, illus., 74 pp. 1925.

Where the grain stands in the field for some time after ripening there is some loss from shattering and a greater risk of loss from storm. Most farmers who use combines delay harvest from 6 to 8 days after it would be possible to begin with a binder and from 2 to 4 days after the grain is ripe enough to cut with a header. This delay in starting harvest increases to a certain extent the risk from storm loss while standing. On the other hand, risk of grain losses in the stack or shock is eliminated.

New Problems Created

Some changes in farm organization and some new problems in grain marketing are likely to result from an extensive use of the combine-harvester in the wheat-producing sections. The reduction in harvesting costs, together with the advantage of operating sufficient acreage to make the best use of the harvesting equipment, should tend to make the wheat acreage per farm approximately the maximum acreage which can be harvested with a single combine. In most sections this would mean a substantial increase in the wheat acreage per farm. The lower production costs should cause wheat to replace more of the competing crops on land which is suitable for the use of the combine.

Some farmers who have a small acreage of wheat find it advisable to own a machine cooperatively with their neighbors. More often, the combine owner with a small wheat acreage completes the harvest season by doing custom cutting for others. In either of these ways, by sharing the investment or by increasing returns from the combine through custom work, farmers with a wheat acreage less than the total capacity of the combine find the machine a profitable investment.

Shortens Harvest Season

The general use of combines shortens the harvest season in a given locality. Where practically all the grain is threshed three or four weeks after the grain ripens, the problem of marketing or storing is an important one. Few wheat growers have adequate facilities for farm storage and the greater share of the grain is placed on the market as it is threshed. Dry grain in good condition for storage can be readily moved from the local to terminal elevators, but wheat with a high moisture content offers more difficulty. Many farmers are inclined to begin "combining" before the wheat is entirely ripe, particularly if the field ripens unevenly, and the grain is placed on the market with a high moisture content. In rainy or wet seasons, the desire on the part of the farmer to cut his wheat as rapidly as possible results in placing on the market wheat that is too wet for storage. Few local elevators are equipped to dry or handle moist wheat satisfactorily and most of them refuse to accept wheat with a high moisture content.

In some localities the prevalence of weeds in the fields offers some difficulties to combining. Proper adjustment of sieves will remove the common weed seeds, but some weeds, particularly the Russian thistle, give trouble because of the difficulty of separating the moist weed tips from the grain.

The combine-harvester has been used more for harvesting wheat than for other crops but other grains are handled satisfactorily.

The combine is used to a lesser extent for harvesting oats, barley, rye, and grain sorghums. Such crops may present some problems, one of which is the difficulty of saving straw where feed is needed on the farm. A further use is made of the combine in harvesting such seed crops as beans, seed clover, and alfalfa, as they shatter badly from the continued handling necessary to cut and thresh in separate operations.

L. A. Reynoldson.

COOPERATIVE Livestock Commission Agencies Thriving

Farmers in this country have demonstrated that they can market their livestock successfully through their own business organizations. They have set up in the terminal markets cooperative livestock commission agencies, owned and controlled by stockmen. These agencies handled in 1926 over 150,000 carloads of livestock, or nearly 11,000,000 animals, including sales of stock for producers and purchases of stockers and feeders for farmer customers. These two services, selling livestock for producers and purchasing stock for feeders, are the two main functions of the terminal cooperative agencies in this country. The first of these terminal selling agencies was started in 1917. There are 25 of them now in operation, most of which have been organized in the last five years. Their growth since organization has been so rapid that many of them stand first in volume of business in the markets where they are operating.

Approximately 65 per cent of the livestock handled by cooperatives at terminal markets is the business of local cooperative shipping associations. The other 35 per cent is contributed by stockmen who ship individually or in multiple-owner lots, or who truck in their stock to the market. At some terminal markets the cooperative selling agencies handle practically all of the business of the local associations shipping to those markets.

The members of these organizations are producers of livestock. A board of directors is elected by the membership at large. The directors in turn choose a manager who is responsible for the details of operation and for the carrying out of the business policies of the association. Nearly all of the associations are of the nonstock type. They are adequately bonded for the protection of the agencies and shippers doing business with them.

In their actual operations on the market, these associations sell cattle, hogs, and sheep and buy stockers and feeders. Livestock which is consigned to them is received, yarded, fed and watered, sorted and graded if necessary, and sold to the best advantage by salesmen of the association. It is bought by packer buyers, traders, order buyers, butcher buyers, and other operators on the market, and also by livestock producers and feeders. The agencies do not assume ownership of the livestock that is consigned to them. The shipper remains owner until the transaction with the actual purchaser is complete.

Methods of Payment

Collections are made by the commission agency; marketing expense, such as commissions, freight, yardage, feed, and insurance, are

deducted and the net returns deposited in the city bank, which is the correspondent of the shipper's country bank, the same day the livestock is sold. The deposit is made to the credit of the country bank, which when notified places the returns to the credit of the shipper. Bank cashier's checks are issued occasionally upon request by the shipper. Returns for stock shipped by truck are usually paid by company checks,

Livestock is purchased for the customer's account by the cooperative association and shipped to his ranch or feed lot as he may direct. The purchaser may or may not be present on the market. If he sends in an order for stockers or feeders, he indicates the species and grade of animals desired and usually states the maximum price he is willing to pay. A stocker and feeder buyer of the association takes the order on the market and fills it to the best of his ability for the interest of the customer. If the purchaser is present when the transaction is made, he may give the agency a check for the amount due directly, but the usual practice is for the association to draw a draft on the purchaser's bank, adding the buying commission and other regular charges to the cost of the livestock.

In addition to the two main functions of selling and buying livestock, some of the terminal cooperative agencies have set up credit corporations and, through the medium of the Federal intermediate credit bank, are financing livestock farmers in their feeding operations. This has resulted in a saving to stockmen in some sections of about 1 to 2 per cent in interest charged.

Some of the terminal cooperative organizations have established livestock pools. These have handled principally lambs and cattle. The lambs are purchased on the ranches, principally in Wyoming and Montana, and are shipped direct to feeders in the Middle West. The cost of all the lambs and cattle and the expenses of buying them are pooled and each feeder pays the average cost for the stock which he receives. The cattle are purchased principally in Texas and are shipped direct to Corn Belt feeders.

Large Savings Effected

Since the terminal cooperative firms began doing business on the markets, they have saved to the farmers, in reduced commissions and in amounts paid back to shippers in the form of cash refunds, approximately $4,500,000. These savings have been possible because of the large volume of business handled by the terminal associations. In 1926 they handled on an average over 15 per cent of the total livestock on the markets where they operated. Savings might have been still further increased but for the necessity, well recognized by cooperatives, of maintaining an organization sufficiently large to render efficient service on "peak days" as well as during the slack periods.

Briefly, some cooperative associations on the terminal markets have accomplished the following: (1) They have demonstrated that they can render efficient service at reduced cost; (2) they have raised the general standard of service rendered at the markets through the competition they furnished; (3) they have obtained

better service for stockmen by improving the old and creating new services; (4) they have developed cooperative leaders in their own organizations.

C. G. RANDELL.

COOPERATIVE Marketing Mainly Dependent on Business Management The form of organization in a cooperative enterprise is perhaps only of minor importance as compared with management. Wisely planned and intelligently directed management is by far the most important element in business success and lack of it the most certain cause of failure. The marketing of agricultural products is a business undertaking and the cooperative association that undertakes the job must adhere to the fundamental principles of business. The practices may differ widely between various cooperative businesses, as they differ in commercial business organization, but the fundamental principles usually remain the same.

The management problems of a cooperative may often appear different, and some are different, from those confronting commercial businesses, but in wrestling with these problems the cooperative needs to observe the same fundamental business principles that permeate all successful business institutions to-day.

What do we mean by this important phase of business called management? In a broad and practical sense business management is the control and direction which is exercised over all the activities of the organization. It is not limited to any one phase, but includes office operations, accounting and pooling, merchandising, market analysis, membership relations, and many other activities.

Responsibilities of the Board

The control and direction of a cooperative can not be left to any one individual. In any business there is a group of individuals to whom has been delegated the responsibility of formulating the policies and directing their execution—the board of directors. Every member of the board has a definite share in the responsibility of formulating sound policies and seeing to it that they are properly carried out.

In speaking of management, particular emphasis should be given to the duties and responsibilities of the board of directors, as the directors play a most important part in the efficient operation of cooperative associations. It is well to remember, in business management, that, unless a man has sound business sense and is peculiarly adapted to acting as manager of a business, or to functioning as a director or officer, he may prove detrimental rather than helpful, although personally of the highest type. A man might be the best farmer in the community and the most loyal member in the association, and yet not be fitted to help direct its business operations. Many cooperative enterprises have been wrecked because the board of directors lacked an understanding of management problems. Internal petty politics, too, have often hindered the effectiveness of the management.

One of the serious weaknesses of many cooperatives is found in the tendency of members of boards of directors to shirk their responsibility. Too frequently the individual member elected to the board looks upon his selection as a director in the light of an honor conferred upon him in recognition of his standing in the community and as carrying with it no responsibility. Such an attitude is unfortunate, and until every director comes to feel that he is accepting the trusteeship for the successful conduct of the business, cooperative marketing will fail of its full measure of success.

Directors are Trustees

Membership on the board of directors is a trusteeship which carries with it certain responsibilities and duties toward the successful conduct of the organization's business. The members upon whom this trusteeship has been placed must inform themselves regarding the principles of business and about the operations of the business for which they are responsible. The importance of each director being thoroughly informed about the operations of his organization, and concerning the broader business principles, upon an understanding of which hangs much of the organization's future progress, can not be overemphasized. There is many a cooperative organization to-day whose progress is being slowed up because of the lack of a forward-looking program and wise direction.

The board of directors and the executive staff (usually consisting of the manager and responsible department heads) of a cooperative enterprise are charged with the responsibility of formulating policies and directing their execution. While each section has its own definite and distinct responsibilities, it is essential that these two small groups work together closely in dealing with the many problems that arise in conducting a business.

Duties of Directors

Broadly speaking, the board of directors is charged with (1) the formulation of policies, (2) selection of a competent manager to carry out these policies, (3) ascertainment that these policies are actually put into execution, and (4) knowledge of the results they bring about.

The board's job in formulating policies is a most important one. Before board members can formulate sound policies they need to seek facts. The manager should be in a position to assist the board in obtaining available facts and in the interpretation of their significance. In becoming acquainted with the business it is important that the directors form conclusions only on the basis of facts and that every vestige of prejudice and preconceived opinion be cast aside. They can not be guided by opinions of members and others. Hearsay evidence is often fatal to successful operation.

In selecting a competent manager the board of directors is called upon to perform one of its most important duties. With the average board of directors of a farmers' cooperative this often presents one of the most difficult tasks. The average farmer has had but little contact and experience with big business operations and has only a limited knowledge of the essential qualifications that are indispensable to successful executive work.

In ascertaining whether or not policies have been satisfactorily carried out and in studying the results obtained, one frequently finds the board apparently at a loss for a yardstick with which to measure the progress made. Unfortunately, instead of attempting to weigh the results of management by careful study and analysis of available facts regarding the operations, too often the board members spend their time meddling with petty and insignificant details of day-to-day affairs.

Selecting a Manager

The manager and the executive staff are responsible for carrying out the policies laid down by the board, as well as attending to the details of operation. The manager should be selected because of his ability to carry out policies and handle administrative matters. The handling of details must not be interfered with by the board. The manager and his executive staff must be free to work out the details and seek results in their own way.

In a measure, management will succeed only to the extent that a real effort is made by the board and executive staff to answer the questions of price, demand, and merchandising problems, on a basis of actual facts rather than on the basis of mere opinion. In this respect a certain amount of research, merely as an aid to management, particularly with the large-scale cooperatives, is highly important and helpful to the board in shaping its program. The board needs statistical information on price history as a basis for determining the price and sales policy. It needs information as to what factors determine demand and a knowledge as to the grades suited to the particular markets they are serving. A statistical analysis of available data will often throw some very helpful light on old and new markets, their peculiarities and needs. In the case of some cooperatives, technical research will help develop new products and by-products which can utilize excessive supplies. Commercial research, however, should be looked upon only as a tool and a helpful guide in the development of the marketing program and more efficient operation. It is not a substitute for intelligent work and good judgment.

Selling Program

In any program of selling farm products a cooperative marketing association is first confronted with the important problem of developing a sound and effective price and sales policy. It is only through the development and successful carrying out of such a policy that the members are able to obtain the full benefits from their organization.

The boards of directors are responsible for the formulation of a sound price and sales policy for the association. In discharging this important responsibility they need to know the factors which determine the price for the commodity which they are handling, the reaction of price to changes in supply, what the effective demand is and how it is reflected in the price, the probable seasonal and other changes in price under varying economic conditions. In all these matters the manager and other members of the executive staff can be of considerable help and their advice should be sought. They should make available to the board full information about supply, probable

market demand, and price behavior. All of this is vital to the board in shaping its selling program.

In popular discussion there are two theories as to what constitutes the best price and sales policy for a large-scale farmers' cooperative marketing association, which undertakes to perform the marketing functions of carrying the product and feeding it into the consuming channels. One of these assumes that it is the aim of a cooperative association to effect such control of a product as to enable it to dictate an arbitrary price, without reference to supply and demand conditions. The other theory assumes that an organization handling farm products can not maintain prices which are out of line with economic conditions, and that in the long run its members will receive the largest benefit through the development of a price and sales policy which attempts to adjust supply to demand.

Limitations of Price Fixing

It is, of course, possible to fix a price, but it is not possible to make the customers pay that price. There is practically no agricultural commodity which is so essential to human existence that substitution can not be made for it, at least in part, and this possibility of substitution destroys any effective arbitrary control of price over a period of time. Usually a brief analysis of the price history of various commodities and its relation to some of the more evident demand and supply factors will illustrate the difficulty that a cooperative association would encounter in attempting to fix prices arbitrarily.

The aim of the selling program of a cooperative should be a service to customers of the product handled. Broadly speaking, it must sell according to market demand. Such a program will usually bring the most satisfactory results in the long run.

A thorough study of price and demand history of a commodity and a knowledge of present and potential supply are essential before the correct selling program can be determined for that commodity. What might constitute a satisfactory selling program for one commodity might not bring the desired results with other commodities. Because of ever-changing economic conditions, it is unlikely that the sale of the crop in equal periodical installments would constitute the type of a sales program which an organization would want to adhere to strictly at all times. Demand is not equally active at all times, and to force the sale of a commodity in order to satisfy the "equal installment" program would probably result in making unsatisfactory price concessions.

Importance of Seasonal Trends

A large-scale cooperative marketing association handling wheat or cotton, for instance, certainly should give some attention to the seasonal trends in the price of the commodity it is handling. Some very helpful information on the seasonal price changes can usually be obtained through a careful examination of the seasonal movements of individual years over a long period. It is not possible for an association to take advantage of seasonal changes unless some reliable means for forecasting these seasonal changes can be found.

Further research, both by large cooperatives and State and Federal agencies, is needed on the whole question of price behavior of farm commodities.

But in addition to the seasonal price movements, there are usually short-time up-and-down swings in the market. These continue for varying lengths of time. The strongest demand for a commodity usually comes during periods of rising prices. On the other hand, manufacturers and dealers generally do not want to buy when the price is falling because of the belief that it will go lower. It would seem that a program of selling could be evolved by some of the large cooperatives which would take advantage of short-time swings in the price movement by selling the commodity in response to demand which is usually strong during periods of rising prices, and by not forcing sales during the periods of price recession. Such a selling program would probably tend to result in a somewhat better-than-average price.

An effective selling program must, of course, go further than merely taking advantage of upswings in the market. It also involves the adoption of satisfactory grades, perhaps standardized grades, and these must always be lived up to if the cooperative is to maintain the confidence of its customers. The association must know the needs of its customers in order that it may provide for satisfactory terms and methods of sale. As already indicated, the aim of selling must be effective service to customers.

CHRIS L. CHRISTENSEN.
A. V. SWARTHOUT.

COOPERATIVE Marketing to Be Forwarded by Educational Program The basis of sound progress in cooperative marketing is an appreciation of the essential marketing services to be performed by marketing organizations and a better understanding of the possibilities and limitations of the movement. This was recognized by Congress in the act approved July 2, 1926, creating a division of cooperative marketing. A paragraph of this act authorizes the division "to promote the knowledge of cooperative principles and practices and to cooperate, in promoting such knowledge, with educational and marketing agencies, cooperative associations, and others."

As an immediate program, the division proposes to cooperate in organizing and conducting short courses for members and employees of cooperatives, county agents, agricultural students, and others interested in cooperation.

In most instances, these schools will be conducted by the agricultural colleges. It is planned, however, to enlist the active support of the cooperative associations in the States or regions in which the schools are held. Each important association should be represented on the program, in order that the school may be stimulated and guided by a consideration of the practical problems which these organizations have to meet, if for no other reason. The associations also should be interested in increasing their members' knowledge of cooperation and in improving the efficiency of their employees through education.

The subject matter presented at these schools will vary with local conditions. It is not intended to present an extensive theoretical discussion of cooperative marketing, but rather to bring to the foreground the fundamentals of marketing; and the policies, problems, and accomplishments of the cooperative associations marketing the products of the State. To do this intelligently, however, it will be necessary to present as concisely as possible the principles and practices of cooperative marketing and the trends and present status of the movement. It is also necessary to give consideration to factors that determine the price of farm products in order to form a reliable estimate of the possibilities of cooperation and evaluate the efficiency with which the cooperative organizations of the region are operating.

May Lead to United Action

In general, schools of this kind will be valuable in so far as they inculcate the right attitude toward cooperative marketing on the part of the members and contribute toward the business efficiency of the organizations. They should also serve to bring the cooperative associations within the region closer together, and perhaps lead to some form of united action in meeting their common problems.

The limits of this article do not permit discussion of other methods which may be employed for the dissemination of correct information regarding cooperative marketing. Short courses in the local communities given under the joint auspices of the cooperative organizations and the agricultural colleges, work with the boy's and girl's clubs, the agricultural high schools and civic organizations, all offer opportunities for making cooperation a part of the economic philosophy of the rural and urban people. The development of these schools carries with it the responsibility of presenting sound and constructive information which will guide the producers in carrying out their cooperative marketing programs. It is important, therefore, to obtain the active cooperation of the leaders in cooperative marketing and of State and Federal workers engaged in economic research.

A. W. McKay.

COOPERATIVE Marketing Recognized in Numerous Laws

The right of farmers to market their products collectively through their own organizations has gained rapid recognition during the last few years. This recognition has been reflected in many laws designed to enable farmers to accomplish this purpose. All but two of the States now have statutes expressly providing for the incorporation of cooperative associations. Thirty-eight of the States have enacted substantially the same form of law. A majority of the States have passed cooperative marketing laws within the last 10 years. Most of these statutes were passed within a shorter period of time. There is no Federal statute providing for the incorporation of cooperative associations, but there are Federal statutory provisions defining the status of cooperative associations under the Federal antitrust laws.

Prior to the enactment of State statutes expressly authorizing the formation of cooperative associations, such associations were formed

from time to time in various States under the ordinary business corporation laws. The formation of associations under such statutes was not satisfactory because the business corporation laws were not drawn with the needs of cooperatives in mind. They reflected the commercial rather than the cooperative viewpoint. Many of these statutes did not permit of the organization of nonstock organizations. Generally, they provided that the holder of stock should be entitled to as many votes as he held shares of stock, thus providing for the dominance of capital and not permitting the equality among members which is essential to cooperation. These statutes contemplated the payment of dividends upon a stock rather than upon a patronage basis. As a result of these conditions and others, those interested in cooperation early in the growth of the movement found it essential to have statutes enacted expressly providing for the incorporation of cooperative associations.

Laws Authorize Contracts

Nearly all of the statutes which have been passed providing for the organization of cooperative associations authorize associations formed under them to enter into contracts for limited periods with their members for the delivery of their products for marketing. Associations are also authorized to include in their contracts and by-laws provisions with respect to liquidated damages; that is, the associations are authorized to stipulate in their contracts and by-laws reasonable sums which members are required to pay if they fail to deliver their products for marketing in accordance with their agreements.

Such statutes also usually authorize the courts to decree the specific performance of contracts of associations formed under them and to enjoin members from disposing of their products outside of associations. State courts have in many cases upheld the right of cooperative associations to recover liquidated damages and have held that they are entitled to the specific performance of their contracts and to enjoin members from violating them.

As cooperative associations began to be formed in increasing numbers, leaders in the movement were disturbed for fear the associations might be held to be organizations in restraint of trade or in violation of the antitrust laws. They urged that there was an inherent and fundamental difference between the condition and circumstances of isolated farmers largely dependent on the caprice of the seasons and those engaged in other pursuits. Only a few associations were prosecuted for alleged violation of the antitrust laws, but there was always the fear that prosecutions might be instituted at any time. On account of this fact, cooperative leaders early in the growth of the movement, and beginning about 1890, were instrumental in having various States enact laws designed to give cooperative associations standing under their antitrust laws, and now a majority of the States have statutory provisions dealing with this matter.

Exemptions from Antitrust Laws

Practically all of the statutes that have been enacted within the last 10 years providing for incorporation of cooperative associations

provide that any association formed under them "shall not be deemed to be a combination in restraint of trade." Cooperative leaders in 1914 were instrumental in bringing to the attention of Congress the need for a declaration by it that cooperative associations, because of their form or existence, were not to be regarded as in violation of the antitrust laws. The result was section 6 of the Clayton Act which provides, in part, that "Nothing contained in the antitrust laws shall be construed to forbid the existence and operation of labor, agricultural, or horticultural organizations, instituted for the purpose of mutual help, and not having capital stock or conducted for profit, or to forbid or restrain individual members of such organizations from lawfully carrying out the legitimate objects thereof; nor shall such organizations, or the members thereof, be held or construed to be illegal combinations or conspiracies in restraint of trade, under the antitrust laws."

It will be observed that section 6 of the Clayton Act does not cover the case of cooperatives organized with capital stock, but, on the other hand, is confined strictly to nonstock organizations. The courts have construed this section to mean that an organization is not to be declared in violation of the antitrust laws simply because of its existence and operation, but, on the other hand, they have held that organizations of the type referred to therein are amenable to the law if their conduct is not in accordance therewith.

Because of the fact that section 6 of the Clayton Act referred only to nonstock organizations, and because many felt that this section was not as clear as it should be, cooperative leaders continued to seek for further legislation with respect to the relation of organizations of farmers to the antitrust laws. As a result, on February 18, 1922, the Capper-Volstead Act became a law, which states expressly that "persons engaged in the production of agricultural products as farmers, planters, ranchmen, dairymen, nut or fruit growers may act together in associations, corporate or otherwise, with or without capital stock, in collectively processing, preparing for market, handling and marketing in interstate and foreign commerce, such products of persons so engaged."

Conditions Imposed on Cooperatives

There are certain conditions in the act which cooperatives desirous of obtaining the benefits thereof must meet. Such associations must be operated for the mutual benefit of their members as producers, and they must not "deal in the products of nonmembers to an amount greater in value than such as are handled by it for members." In addition, an association to obtain the benefits of the act must restrict each member to one vote in the affairs of the association or else the association must "not pay dividends on stock or membership capital in excess of 8 per cent per annum." The act provides that, in the event the Secretary of Agriculture shall have reason to believe that any association operating thereunder monopolizes or restrains trade in interstate or foreign commerce to such an extent that the price of any agricultural product is unduly enhanced by reason thereof, he shall file a complaint against such an association and, following a hearing, if he finds that this is true he is directed to issue an order to the association requiring it to cease and desist

from monopolization or restraint of trade. Up to the present time no complaints have been issued by the Secretary of Agriculture and no facts have been presented to him involving any association, indicating that it has unduly enhanced the price of any agricultural product.

The general principles and methods of cooperative marketing have been involved in cases that have been passed upon by the supreme courts of 21 States within the last 6 years, and they have been upheld in every instance. During this period there have been no cases decided by appellate courts which have held that cooperative associations were illegal.

Recent Decisions Favorable

Some of the earlier decisions involving cooperative associations held either expressly or by implication against the principles of cooperation, but, as indicated, within the last 6 years the supreme courts of 21 States have uniformly rendered decisions favorable thereto. During this time, in each instance in which an appellate court has decided a case against a cooperative association, the opinion did not involve the basic principles of cooperation but rather rested upon the interpretation of the marketing contract, or upon some other fact not involving the general principles and methods of cooperation. The decision of the Supreme Court of the United States under the grain futures act upholding the right of cooperative associations of grain farmers to have their own representatives on the floors of grain exchanges, by implication approves the principles of cooperation.

L. S. HULBERT.

CORN Borer Has Invaded Corn States

The European corn borer has invaded the Corn Belt. It is present in the Maumee River Basin and has crossed the eastern boundary of Indiana. What are we going to do about it?

For two years past this pest has destroyed the growing corn throughout a large part of Kent and Essex Counties in southern Ontario. The spectacle presented by the complete ruin of these crops over more than 400 square miles, as viewed by the leading agricultural authorities of our large corn-growing States, has rendered the question of corn-borer control one of paramount importance.

Since 1920, when an intense and widespread infestation of this pest was discovered in southern Ontario, the department has realized that because of the facility of flight possessed by this moth nothing within the power of man could prevent the eventual invasion of the Corn Belt, and it has laid its plans accordingly.

During the intervening years the department has conducted a thoroughgoing scientific investigation of the whole problem both in this country and in Europe. This inquiry has resulted in demonstrating that the control of this pest lies primarily in the application of cultural methods of combat, such as the harvesting of the crop in a scrupulously clean manner and the subsequent disposal of the stalks, cobs, and fodder by shredding, burning, feeding, or ensiling them. To be effective this must be done previous to the emergence of the moths or by May 1 following the harvest.

A less desirable alternative is the clean plowing down of all corn débris, preferably during the autumn of its harvest. Exhaustive experimental work has shown this method to be fairly effective, but only where every vestige of the corn plants was either plowed entirely under or where the débris remaining after plowing was carefully gathered and burned. Where such methods of culture have prevailed in Europe, which is the native home of the borer, the insect does little or no injury. On the contrary, where careless methods of handling the crop obtain and the stalks are allowed to remain from year to year, the corn borer often reduces the yield from 25 to 50 per cent or more.

No Short Cut

A thorough study of the problem has revealed no short cut, no easy method of subjugating the corn borer. It has therefore become obvious that for much of the Corn Belt the solution of this problem lies primarily in a modification of present methods of corn culture. This fact has been recognized not only by the department but also by the States of Pennsylvania, Ohio, Michigan, Indiana, and New York, which have issued mandatory regulations designed to obtain the necessary action on the part of corn growers within the infested regions. In brief these requirements are as follows:

All cornstalks, remnants of stalks, and cobs of each year's corn crop, in fields, buildings, stacks, or elsewhere, if not fed, made into silage, or shredded, shall be destroyed by burning or by plowing under completely or by a combination of burning and plowing, before May 1 of the following year.

As Congress recently has appropriated $10,000,000 for such work, the department has undertaken a comprehensive control campaign which is being waged in cooperation with State and county organizations throughout designated areas in the States previously mentioned. In the conduct of this work the farmers will be paid for such extra labor performed by them as is additional to that which is usual and normal in ordinary farm operations. The maximum rate for extra labor allowance authorized is not to exceed $2 per acre for field or sweet corn, for each acre of such corn grown on such farms as shall successfully pass inspection as to compliance with the State regulatory requirements.

Canada Moves to Protect American Growers

The Province of Ontario, Canada, recently promulgated similar regulations, the enforcement beginning with October 1, 1926. This action is of the greatest importance to American corn growers and especially those of Michigan and Ohio. This is true because there is good reason to believe that much of the recent increase in infestation, which has become so apparent there, was due to the arrival of swarms of moths from severely infested fields in Ontario, where until recently little or nothing in the way of clean-up work has been attempted. Ruined fields of corn extending over hundreds of square miles remained untouched because the crop was a failure and the growers had become discouraged. This condition permitted millions of corn-borer moths to emerge during the summers of 1925 and 1926

and to fly across the international boundary into the cornfields of Michigan and Ohio. The newly effective Canadian regulations should therefore be hailed as a boon to the farmers in the United States because they should result in shutting off a most dangerous source of further severe infestation.

Agricultural Engineers Help

At the suggestion of the department the agricultural engineers of Ohio State University, with the cooperation of the large manufacturers of farm machinery, have developed and placed on the market at a reasonable cost attachments for most of the corn harvesters now in general use, that will cut the corn practically at the ground line and thus aid the growers materially in adopting the changes in harvesting methods necessary to combat the pest. These ingenious men have also designed a machine which picks and husks the ears and converts the remaining stover into a finely divided residue which either may be used as silage or returned directly to the land as fertilizer, with little or no increase in costs over those incurred by present harvesting methods.

It is believed that by the aid of these mechanical contrivances and the conduct of a thoroughgoing publicity campaign the necessary changes in corn culture can be obtained without serious shock to the corn-growing industry.

An extremely important part of the present campaign for the repression of the corn borer, and one which apparently is not thoroughly appreciated by the public at large, is the inspection and quarantine service as conducted by the Federal Bureau of Entomology and the Federal Horticultural Board in cooperation with the various States. This service aims to prevent the transportation and consequent spread of the corn borer through the various avenues of commerce. During the shipping season for green corn this service operates inspection stations on all main highways leading out of the areas known to be infested by the pest. At such stations all vehicles are stopped and inspected to insure that corn containing borers shall not be carried by such means into uninfested territory.

That this inspection service is an effective and valuable means of preventing the rapid spread of the pest over long distances is strikingly shown by the fact that during the corn-shipping season of 1925 nearly 2,500,000 automobiles were thus inspected in western New York, Ohio, Pennsylvania, and Michigan. From these were taken 171,502 ears of corn which contained 1,972 corn borers. As many of the automobiles from which such corn was taken were bound for points as far west as Chicago, it is apparent that the interception of this infested corn undoubtedly served to prevent the establishment of the pest in the heart of the Corn Belt years and perhaps a decade in advance of its possible arrival there through such natural means as the flight of the moth.

Annual Scouting Campaign

In addition to its other important functions, the inspection service conducts annually a scouting campaign to determine the geographical

limits of the spread of the pest from year to year. As a result of this, it becomes possible to alter the quarantine regulations in accordance with the annual spread of the pest and to locate quarantine stations at points where such dangerously infested corn as that previously mentioned will be certain of interception.

To help in the combat with the corn borer, the work of importing the insect enemies of the pest from Europe was begun several years ago, and this has been carried on with increasing vigor yearly. In all some 10 species or kinds of these parasites have been liberated, of which five species are known to have become established. Many hundreds of thousands of these have been turned loose to work their will on the corn borer, but it may be 20 years before they become numerous enough for their effect upon the borer to become noticeable. In the meantime, and very likely also after these parasites become effective, the cultural methods of combat previously described must be relied upon to render corn growing profitable wherever the corn borer thrives.

The Real Combat Has Only Begun

The fight to prevent this truly formidable pest from robbing the fertile Mississippi Basin of its greatest crop has only just begun. If success is to crown our efforts, this fight must continue in an earnest, thorough-going, and persistent manner for years to come.

Fear has been expressed in some quarters that the advent of the corn borer means the doom of profitable corn growing in America, but this need not be true if the growers will respond to the department's warnings before it is too late.

W. R. WALTON.

CORN Breeding in New Experiments The results of varietal comparisons and of extensive breeding experiments have shown that the older methods of corn breeding were unable to increase the productiveness of better yielding varieties significantly. They also have shown that simple mass selection of seed ears from productive plants of an adapted type was practically as efficient as the elaborate ear-to-row method which had been advocated so widely. A better knowledge of the laws of heredity made clear why progress under the older methods was limited and, of even more importance, pointed to selection within self-fertilized or selfed lines as a sound basis for corn improvement. It is with methods of corn breeding based upon the principle of selection within selfed lines that this article is concerned.

The first step in breeding corn by selection within selfed lines is to self-pollinate a number of plants of the variety or varieties to be used. (Fig. 53.) Seed from the better ears produced is planted in ear rows and plants in these rows are self-pollinated. This procedure is continued during several generations, only the better ears from the better plants in the better rows being selected each year.

The effects of self-fertilizing corn are immediate and obvious. Defective characters which have been suppressed in the hybrid condition of ordinary corn come into expression. There is a cumulative

decrease in vigor and productiveness, which is most rapid following the first self-fertilization and which becomes gradually slower with each successive generation. There are marked differences in the vigor and appearance of different lines. As self-fertilization continues the plants within individual lines become more and more uniform, thus accentuating the differences between lines. After six or seven generations of self-fertilization, approximate constancy is reached, after which there is little further reduction in vigor and the lines breed more or less true.

FIG. 53.—A corn plant bagged as in hand pollinating. Shoots and tassels are protected from contamination with stray pollen by bagging. At the proper time pollen from the selected tassel is applied to the silks of the selected ear shoot, which again is bagged. In self-pollinating, the pollen and silks are those of the same plant

Lines Used in Hybrid Combination

It is these lines, themselves inferior to the original variety, that the breeder uses in hybrid combination of one kind or another in obtaining larger yields of corn. As the lines become uniform, crosses are made between unrelated lines in various ways to determine those that are best in hybrid combination. The number of lines is reduced, by elimination of the poorer ones, to the two, four, or more that are to be used in producing seed for general planting. Three methods of utilizing selfed lines have been suggested, (1) single crosses, (2) double crosses, and (3) synthetic varieties.

Single-crossed seed is produced by growing two selfed lines, A and B, in alternate rows of an isolated plat and pulling the tassels from the plants of one line, as A, before they have shed pollen. The seed produced on the detasseled A plants then represents the cross A×B, which may be planted in the general fields.

Double-crossed seed is produced by crossing two single crosses. This requires maintaining three isolated plats, two smaller plats for the production of the two single crosses and a larger plat for producing the double-crossed seed to be used in general field planting. Double crossing is a device for overcoming the poor quality and high cost of single-crossed seed consequent to its production upon the relatively weak plants of the selfed lines.

Seed selected from fields planted with either single-crossed or double-crossed seed is much less productive than the crosses themselves. Consequently, crossed seed must be produced anew for each year's planting. The use of synthetic varieties does away with the

need for growing crossed seed each year. In producing a synthetic variety many selfed lines which yield well in all combinations are intercrossed and then grown as an ordinary variety. Increased yields of corn have been obtained experimentally from single crosses, double crosses, and synthetic varieties. As yet, however, there is no evidence as to which of these methods will prove most profitable. This will depend not only upon the yields that can be obtained but also upon the practicability of seed production and distribution under the different methods.

Caution Necessary

Several years must elapse after the beginning of a program of corn improvement by selection within selfed lines before the success of the program can be demonstrated. As the methods are new, therefore, the evidence of their efficiency is not as complete as is desirable. At the same time, increased yields have been reported in every experiment in which these methods have been tried. Crosses which have been high yielding in one season have tended to be high yielding in other seasons, and crosses involving similar parentage have tended to behave similarly. The results of these experiments, therefore, have been consistent. On the basis of these experiments it seems probable that crosses can be obtained for many sections which will yield 20 to 30 per cent more than the best available varieties.

It should not be understood that all crosses are high yielding. Many yield less than the parent variety. The best ones can be determined only by careful experiments extending over several years. For this reason, and because of the time and cost involved in preliminary self-pollinating, the method is one for the experiment station rather than for the grower. Corn growers having the ability and willingness to do the right thing at the right time may find opportunity for profit in producing crossed seed after the best combinations have been determined experimentally. For the present, however, crosses of known productiveness are available for very few sections.

Much remains before the details of producing and distributing crossed seed corn commercially can be determined. Furthermore, few crosses have been tested sufficiently to warrant their recommendation. Finally, adaptation is as important in crossed seed as it is in ordinary varieties, so that the fact that a cross is high yielding in one locality is no evidence of its value in a different environment. Caution therefore should be exercised in buying seed corn just because it is a single or double cross.

At the present time the production of crossed seed corn from selected selfed lines has not progressed far enough for practical utilization in more than a very few localities. It promises much, however, as a means of increasing corn yields.

FREDERICK D. RICHEY.

CORN Consumption in Europe The average corn crop of Europe outside of Russia in the five years 1921–1925, inclusive, was 505,000,000 bushels, with net imports in the same years of 204,000,000 bushels. Corn production is confined to the southern part of the continent, with Rumania, Yugoslavia, Hungary, and Bulgaria as the only countries having an ex-

portable surplus. Italy ranks next to Rumania and Yugoslavia in corn production, but has no surplus for export.

Very little corn is used for human food outside of the corn-producing areas, but in the northern countries of Europe it is used extensively for livestock feeding and for industrial purposes. The British Isles, including Ireland, imported an average of 76,000,000 bushels annually in the years 1921–1925, inclusive. It is roughly estimated that of these imports one-third is used for poultry feeding, from one-third to one-half for feeding other kinds of livestock, and the remainder chiefly for distilling and starch manufacture. In relation to population and area, Denmark and the Netherlands are the largest consumers of corn in northern Europe. In Denmark corn is used as feed for cattle, hogs, and poultry. In the Netherlands it is not only used for feeding but also for distilling.

For feeding poultry there is a universal preference in northern Europe for Argentine corn because of the small, round, hard kernel. Many poultry feeders are under the impression that chickens can not swallow the larger flat kernel of the American corn. In Germany very little corn is used for feeding except in the extreme southern part of the country which is supplied largely from the Danubian countries. In the industrial areas of Germany some corn is used for distilling and starch making, and there has recently been some development of corn-sugar and corn-oil manufacture.

Table 2 indicates roughly the relative importance of the more important European countries as consumers of corn:

TABLE 2.—*Indicated consumption of corn in principal European countries—average 1921–1925*

Country	Production	Net exports (−) or net imports (+)	Indicated consumption
	Million bushels	*Million bushels*	*Million bushels*
Rumania	143	−24	119
Italy	95	+13	108
Yugoslavia	109	−13	96
United Kingdom [1]		+76	76
Hungary	58	−2	56
Spain	26	+14	40
France	15	+19	34
Netherlands		+33	33
Germany		+33	33
Bulgaria	23	−4	19
Denmark		+17	17
Czechoslovakia	10	+6	16
Belgium		+16	16
Portugal	11	+2	13
Austria	4	+5	9
Greece	8	[2] +1	9
Switzerland		+5	5
Poland	3	+1	4
Norway		+3	3
Sweden		+3	3
Total	505	204	709

[1] Including Irish Free State.
[2] From year average.

G. B. L. ARNER.

COTTON of American-Egyptian Variety in U. S. Three-quarters of a century ago there was developed in Egypt a new commercial type of cotton which has become that country's chief source of wealth. Egyptian cotton is related to the American sea-island type and is noted for the length, strength, and fineness of the fiber. The different varieties range from about 1⅛ to 1½ inches in staple. The annual cotton acreage of Egypt during the five years 1921 to 1925 averaged approximately 1,768,000 acres, or about one-third of the total cultivated area. The average annual production during the same period was the equivalent of approximately 1,354,000 American bales (of 478 pounds net weight).

The good qualities of Egyptian cotton were soon appreciated by English and later by American spinners. The strength and fineness of the fiber make it peculiarly adapted for the manufacture of sewing thread, fine dress goods, and tire fabrics. During the past five years the annual imports into the United States have averaged the equivalent of approximately 201,000 American bales.

FIG. 54.—A field of Pima cotton in Salt River Valley, Ariz., ready for the pickers

More than 25 years ago the Department of Agriculture began to investigate the possibility of producing Egyptian cotton in the United States. Cotton is grown in Egypt entirely under irrigation, in a climate characterized by long, hot, rainless summers. Finding that this type of cotton is not adapted to the main Cotton Belt, the department concentrated its efforts in the irrigated districts of Arizona and southern California, where conditions similar to those of Egypt are encountered.

Selection Gave Good Results

Rather unsatisfactory results were obtained with the varieties introduced from Egypt, but by selection from one of them there was developed in Arizona in 1908 a new variety to which the name

"Yuma" was given. This cotton averaged in staple about $1\frac{7}{16}$ inches. Field tests and spinning tests of the fiber by manufacturers showed its suitability for commercial production, and in 1912 the department furnished seed to farmers for planting a few hundred acres in the Salt River Valley of Arizona and the Imperial Valley of California. The acreage of American-Egyptian cotton in these States increased rapidly during the next five years, and in 1917 the production amounted to about 16,000 bales.

Meanwhile, another variety, the "Pima," had been developed at the United States field station, Sacaton, Ariz., by selection of a very distinct plant discovered in a field of Yuma cotton. The new variety was characterized by finer, lighter-colored, and longer fiber, having an average staple of about $1\frac{9}{16}$ inches. After being tested for several years, its superiority to the older variety could no longer be doubted, and it was decided to substitute Pima for Yuma. It is not easy for an entire community to replace one variety of cotton by another without mixing the seed, but, fortunately, the cotton growers of the Salt River Valley were well enough organized to carry out this undertaking successfully. Since 1918 the entire acreage of American-Egyptian cotton has consisted of the Pima variety. Statistics of production are given in Table 3. They indicate that for the 14 annual crops of lint and seed the gross return to the growers has been approximately $73,500,000.

TABLE 3.—*American-Egyptian cotton: Production and estimated value to the growers of the 14 annual crops*

Year	Lint produced (bales of 478 pounds net weight)	Estimated gross return to the growers		
		Lint	Seed	Total
1912	375	$39,000	$5,000	$44,000
1913	2,135	197,000	28,000	225,000
1914	6,187	483,000	50,000	533,000
1915	1,095	119,000	11,000	130,000
1916	3,331	700,000	86,000	786,000
1917	15,966	5,482,000	620,000	6,102,000
1918	36,187	9,793,000	1,300,000	11,093,000
1919	40,437	16,440,000	2,000,000	18,440,000
1920	92,561	13,275,000	1,200,000	14,475,000
1921	37,094	5,500,000	520,000	6,020,000
1922	32,824	5,152,000	643,000	5,795,000
1923	22,426	3,859,000	476,000	4,335,000
1924	4,319	1,070,000	109,000	1,179,000
1925	20,053	3,920,000	401,000	4,321,000
Total	314,990	66,029,000	7,449,000	73,478,000

The acreage and number of bales produced have fluctuated greatly from year to year. The peak was reached in 1920, when the keen demand of the tire industry for this kind of cotton and the very high prices paid during the winter of 1919–20 led to the planting of 240,000 acres in Arizona and California. The reaction from this boom, together with the general financial depression throughout the country, caused a great drop in prices and a long delay in marketing the 1920 crop. At this time tire manufacturers began to substitute shorter cottons for the high-priced extra staples and the demand for the latter by this industry is now relatively small. On the

other hand, manufacturers of fine dress goods have increased their consumption of Pima cotton and there has been no great difficulty in disposing of the crops produced during the last four years. Production since 1921 has been confined to the Salt River Valley in Arizona.

Importance of Pure Seed

The Department of Agriculture has constantly emphasized the importance of pure planting seed in the production of cotton and particularly of the long-staple cottons, since their value depends largely upon their uniformity and an even-running fiber can not be grown from mixed or mongrelized seed. Cotton varieties are popularly supposed to "run out" after a few years, but there is no evidence that this will happen if the seed for planting is taken each year from well-isolated fields and is ginned with precautions to prevent mixing with other seed.

The Salt River Valley farmers, when they began to grow American-Egyptian cotton, followed the recommendation of the Department of Agriculture and organized themselves as a pure-seed community. Cotton breeders of the department, with the cooperation of the University of Arizona, have aided them by roguing each year a limited acreage, removing the undesirable or "off-type" plants. The seed from the rogued acreage is increased under guarded conditions the following year and the seed from the increase fields is distributed for general planting the second year after the roguing was done. Thanks to the hearty cooperation of the associations of farmers and of the gins which have handled the planting seed, this procedure has been followed so effectively that there is no evidence of deterioration in the protected stock of Pima cotton since it began to be grown commercially.

It was relatively easy to keep the planting seed pure during the first 10 years of the industry, for during that period the whole Salt River Valley was a "one-variety community," Yuma and afterwards Pima having been practically the only cotton grown. Beginning with 1922, however, there has been a large acreage of upland cotton in the valley and this has made it harder to keep the Pima seed supply uncontaminated. Up to this time, however, the difficulties have been overcome successfully and an ample supply of pure Pima seed will be available for planting in 1927.

Marketed in Free Competition

American-Egyptian cotton is marketed in free competition with the vastly larger crop of similar cotton produced in Egypt. Half or more of the Egyptian crop consists of the Sakellaridis variety, which staples about $1\frac{7}{16}$ inches, and is very fine and strong. Although some American manufacturers of fine goods prefer Pima to "Sakel" cotton when prices are equal, they are, as a rule, unwilling to pay more for the former. The postwar depression in Europe has lessened the demand there for fine goods manufactured from very long-staple cotton, with the result that Sakel now reaches the American market in large quantities at relatively low prices.

Pima cotton at Salt River Valley points usually sells for about double the price of middling upland, but on December 1, 1922, the

difference in price in favor of Pima was only 28 per cent and on the same date in 1923 only 14 per cent of the price of middling. These abnormal price relations, together with the greater cost of picking and ginning Pima cotton and the widely held belief that it is much less productive than "short staple" cotton, caused many of the Salt River Valley farmers to abandon Pima and plant upland varieties. It is estimated that of the total cotton acreage of the valley, upland cotton constituted 55 per cent in 1923, 94 per cent in 1924, and 63 per cent in 1925.

The average annual yield of lint per acre in Salt River Valley during the four years 1922 to 1925 was 260 pounds for Pima cotton and 326 pounds for upland cottons, the Pima yield having averaged 80 per cent of the upland yield. The best available data on cost of production indicate that it costs about $13 more to produce 260 pounds of Pima cotton per acre than to produce 326 pounds of upland cotton per acre. The price at Phoenix, Ariz., on December 1, during the four years 1922 to 1925, averaged 26¼ cents for upland (grade middling) and 40 cents for Pima (grade 2). It is computed that with middling upland at 26¼ cents, Pima should sell for 38 cents to be equally profitable under average conditions of yield in the Salt River Valley.

The yield of Pima cotton in the Salt River Valley has averaged only slightly more than one-half bale per acre. Nevertheless, much higher yields, amounting in numerous instances to 1 bale (500 pounds) per acre, are obtained every year on some of the farms in the valley. Some of the land in this locality was never suitable for growing this kind of cotton and much more of it has been rendered relatively unproductive by too many successive crops of cotton. There is good evidence that frequent rotation with alfalfa is very beneficial to the yield of cotton. By restricting the Pima acreage to areas naturally well-adapted to this crop and by using methods of rotation and irrigation which experience has shown will keep the soil in good condition, the average yield could be much increased. The adoption of such a policy would go a long way toward making it easier to produce Pima cotton in the Salt River Valley in competition with "short staple" and to market it in competition with cotton imported from Egypt.

THOMAS H. KEARNEY.

CORN Varieties Resistant to Rot Disease The corn-rot diseases are an important factor contributing to a lower yield per acre and a poorer quality of grain. These diseases may cause a reduction in stand, a seedling blight, a rotting of the roots, a reduction in vigor, barrenness, nubbin production, delayed maturity, and a rotting of the ears.

Proper selection of seed and the breeding of strains of corn resistant to the rot diseases are effective methods that are being used in reducing losses from these troubles. Seed selection and breeding are not the same thing. One can not take the place of the other. And yet they are both very essential in any program of corn improvement. The two operations complement each other. Seed selection may accomplish much in reducing losses from disease and unfavorable

conditions of weather and soil while superior and better varieties are being developed. When such strains and varieties have been perfected and made available for the corn grower it will require much careful seed selection to maintain the disease resistance and agronomic qualities of these improved strains.

In breeding for disease resistance the pure-line method has been used. This method involves the production of inbred strains by continued self-fertilization and selection, followed by the recombination of the better inbreds, after 5 to 10 years of selfing, into first generation crosses, double crosses, and synthetic varieties that possess high disease resistance and other necessary qualities.

Combination of Qualities Needed

An inbred strain resistant to one disease or to one set of environmental conditions is not necessarily resistant to all other diseases or to injury from other unfavorable soil and climatic environments. Strains highly resistant to Pythium root rot may be very susceptible to Gibberella seedling blight, and strains highly resistant to Diplodia ear rot may have a low resistance to injury from light frosts in the fall. Again, strains may be highly resistant to the seedling blight diseases and be comparatively susceptible to both Gibberella and Diplodia ear rots.

In the selection of strong inbreds it is necessary to subject these strains to several different sets of conditions and to determine their reaction to diseases important in each particular locality. In many sections this would include resistance to corn smut, as well as resistance to the root, stalk, and ear rot diseases. It appears possible to find and develop inbreds that combine a high resistance to the principal rot diseases and to smut, and also have them possess considerable merit in such physiologic and genetic qualities as ability to germinate and grow under comparatively cold soil conditions, ability to make the best possible use of the nutrient materials available in the soil, resistance to lodging and stalk breaking, and high resistance to cool weather and light frosts in the early fall.

The planting of the same inbreds on soil that has been in corn for a number of years, and, at the same time, in an adjacent field that has not grown corn for several years, furnishes an opportunity to compare the abilities of the strains to resist an unfavorable soil complex and also to observe the way in which they react to a favorable soil complex. Such comparisons are more valuable when a part of the old cornland has received heavy applications of barnyard manure, phosphate, and lime if necessary. The value of the comparisons is further increased when plantings are made on at least three dates, extending from the beginning to the end of the normal corn-planting season.

Temperature Requirements Vary

Some inbred strains have been found which give a very unsatisfactory stand when early planting is followed by cold weather. Other inbreds do well under the same unfavorable conditions. (Fig. 55.) Frequently those that do so poorly under conditions usually accompanying early planting have a satisfactory field stand and make a good growth when planted later. Results from laboratory

experiments under controlled temperature conditions indicate that inbred strains vary greatly in their temperature requirements for germination and early growth. Some will germinate and grow under comparatively cold soil conditions. To obtain satisfactory

FIG. 55.—Cold-susceptible and cold-resistant strains. A, An inbred very susceptible to injury from a temperature of 24° F. on May 25, at which time the corn was approximately 5 inches high. A later planting of the same strain had a satisfactory stand. B, An inbred highly resistant to the unfavorable weather conditions described above

stands of other strains it is necessary to delay planting until the latter part of the corn-planting season.

Another great advantage of a series of dates of planting is the opportunity afforded to compare the abilities of the inbreds to withstand a short period of drought without injury and to resist lodging during a heavy windstorm. Frequently either a drought or a heavy

FIG. 56.—An inbred very susceptible to *Gibberella saubinetii*. A, Plot grown from seed inoculated with *G. saubinetii* at planting time. B, A contiguous plot grown from uninoculated seed of the same strain

windstorm will hit one of the plantings in the silking stage at which time strains with weak and inefficient root systems are easily detected. Field plantings under varying soil conditions at different dates of planting, over a period of years, thus give much definite

information concerning the physiology and genetics of the various inbred strains of corn and their recombinations.

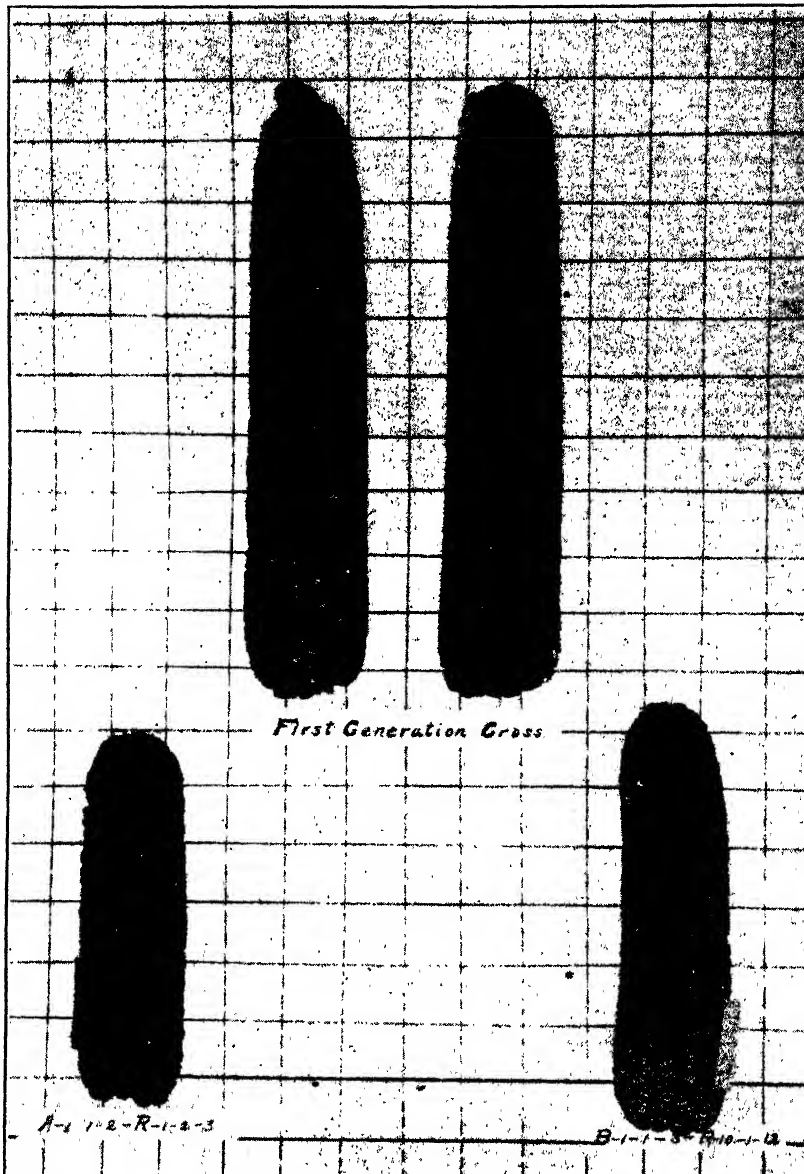

FIG. 57.—Ears of two strong inbreds and their first-generation cross. This cross and other good recombinations have consistently yielded from 15 to 35 per cent more than ordinary open-pollinated corn

In addition to the above-described methods for arriving at some decision regarding the relative merits of inbred strains and crosses the same strains and crosses of corn have been subjected to inoculation with pure cultures of organisms. As one aim of the inocula-

tion experiments has been to determine resistance and susceptibility to specific diseases, an attempt has been made to use productive land that has not grown corn for a number of years. In many cases virgin prairie sod was available.

Cool Soil Favors Scab

It has been found that *Gibberella saubinetii* (Mont.) Sacc., the wheat scab organism, does most damage to corn under comparatively cool soil conditions (below 68 to 70° F.). The injury also is more severe in a rather dry soil. Thus in testing for resistance to this particular disease-producing organism, plantings are made at early and intermediate dates. In addition to inoculation experiments at Bloomington, in central Illinois, inoculation studies have been conducted with the same inbreds and others at Madison, Wis., and at other points in Illinois, planting at intervals of a week to 10 days throughout the corn-planting season.

Much variation in resistance and susceptibility to Gibberella has been observed. Some strains have been found that were so susceptible that only a few straggling plants survived in the inoculated plots. (Fig. 56.) Other strains were intermediate in their reaction to this organism. A few have been highly resistant under conditions usually encountered in the field.

Further studies have been made by inoculating with a pure culture of *Diplodia zeae* (Schw.) Lev., an organism causing seedling blight and ear rot. A species of Pythium causing root rot also has been used. A few strains have proved highly resistant to both of these disease-producing organisms. Field experiments have been supplemented by laboratory and greenhouse studies.

Opportunities in Corn Breeding

The recombinations of some of the inbreds that are high in disease resistance (fig. 57) and that also have a wide range in physiologic function have been giving increased yields of sound grain ranging from 15 to 35 per cent more than ordinary corn. In many cases these increased yields seem to have been obtained with little excess drain on the limiting nutrient elements of the soil. Furthermore, the recombinations of strong inbreds have been affected less adversely by unfavorable soil and climatic conditions than has ordinary corn. Disease resistance, when combined with other important physiologic qualities, becomes very valuable. Thus scientific corn breeding promises eventually to make its contribution to the safety of the investment of the American corn grower and also to the conservation of the natural wealth of our agricultural soils.

JAMES R. HOLBERT.
JAMES G. DICKSON.

COTTONSEED Crushing Industry Grows To the Chinese probably belongs the credit for making the first use of cottonseed oil, for their records show that in the seventeenth century in China cottonseed were sometimes ground and fed to oxen and that an oil suitable for illumination was obtained. In America the first mention of cottonseed oil is found in

the records of Doctor Otto of Bethlehem, Pa., dated 1768. In England in 1783 a prize was posted, by the Society for the Encouragement of Arts, Manufacture, and Commerce, for a practical method for extracting oil from cottonseed. On March 2, 1799, a United States patent was issued to C. Whiting covering a process for extracting cottonseed oil.

It was not until 1826, however, that practical extraction of the oil was attempted in a small mill located in Columbia, S. C. In 1832 a second mill was established in Florence, Ga. Early extractions were used for illumination purposes or in the manufacture of soap.

It was not until 1855 that it was suggested that cottonseed oil was an edible oil and it soon became an adulterant or substitute for olive oil. Some time after 1880 cottonseed oil was introduced into hog lard to temper the lard for use in cold climates. From then on, the history of the use of cottonseed oil from its surreptitious incorporation with lard to its position as an open competitor of both lard and butter is filled with the intrigues of competitive industries.

In 1860 there were seven establishments for the manufacture of cottonseed oil in the United States. This number fell to four in 1867. But from that time the number has increased rapidly. There were 26 in 1870, 45 in 1880, and 872 in 1914. Since 1914 there has been a decided tendency toward consolidation, not only in management but in the construction of larger units and the abandonment of mills of small capacity. In 1914 there were 68 mills that crushed less than 1,000 tons each, and only 12.5 per cent of the mills crushed over 10,000 tons each; but in 1925 there were only 18 mills that crushed less than 1,000 tons each, and 32.6 per cent of the mills crushed over 10,000 tons each. The growth of the industry is shown in Table 4.

TABLE 4.—*Growth of the cottonseed-crushing industry in the United States*

Year	Number of mills	Seed crushed	Value of products	Remarks
		Tons	*Dollars*	
1826	1			Columbia, S. C.
1831	1			Natches, Miss.
1847	1			New Orleans, La.
1860	7	50,000	741,000	3 in Louisiana; 1 each in Missouri, New York, Rhode Island, and Tennessee.
1874		84,000	2,530,000	
1875		123,000	3,970,000	
1880	45	182,000	7,290,000	
1890	119	1,023,000	19,790,000	
1900	357	2,479,386	42,411,835	
1904	717	3,345,370	69,310,624	
1909	810	3,827,301	107,528,204	
1914	872	4,847,628	156,036,437	
1917	728	4,251,680	360,736,000	
1920	675	4,069,166	156,513,000	
1925	530	4,605,227	240,855,000	

Development Has Been Haphazard

Taken as a whole, the cottonseed-crushing industry may be said to have had a rather haphazard development. It began with the purpose of obtaining one valuable product, oil, from a material that had long been considered an offensive nuisance. Up to that time cottonseed had been used for planting; fed to cattle with caution, lest they be poisoned; and, when rotted, occasionally used by

more progressive farmers as a manure. So offensive a nuisance did the annual accumulation become that as measures necessary to the protection of the public health, laws were enacted regulating its disposal.

Preparation of the oil and its utilization has ever been uppermost in the minds of those engaged in the industry, to the passive and general neglect of other phases of the business. Improvements and changes in methods have resulted rather from the critical demands of the consumers of the products of the mills than from initiative within the industry.

The demands of the refiners of oil necessitated a careful study of its extraction and of the factors influencing its quality, for not only did the producers have to meet the demands of the refiners, but, indirectly if not directly, they had to meet the problems of increasing the consumption and especially of combating the opposition of producers of other oils with which cottonseed oil soon became a serious competitor.

An early effort was made to dispose of the residual cake, first as a fertilizer and later as a cattle feed; but the efforts to encourage the use of the cake when ground into meal, as a cattle feed, met with prejudices, owing largely to the disastrous results of feeding highly concentrated foods without regard to food values. These prejudices coupled with laws regulating commercial feeds and fertilizers in turn brought about a thorough study of this product.

Residual Fiber a Problem

The residual fiber found on cottonseed after they have been ginned has always been a problem to the crushers. If the fuzz is absent, that is, if the seeds are what are known as slick seed, it is exceedingly difficult to make a sufficient separation of the meats and hulls so as to make possible a full recovery of oil. Moreover, the presence of the excess hulls reduces the value of the cake. When the seed are fuzzy, the usual condition of upland cottonseed, if the residual fiber is not removed before crushing, portions of the meats can not be freed from them, and more or less oil is absorbed by them, thus occasioning losses. On the other hand, the cost of removing the residual fiber often offsets possible savings in meats and oil. As the delinting of the seed is of questionable economy, the controlling factor has been generally the cost of the process rather than the value of the linters produced. At first it was thought inadvisable and unnecessary to remove much of the residual fiber—only enough to facilitate the separation of the meats and hulls, and certainly not more than that which would permit the resulting linters to complete with cotton lint. The product so obtained, found ready sale as a form of cotton and was used for spinning and batting.

Gradually, as methods of extraction improved and the demand for the oil increased, better delinting of the seed and separation of the meats were effected, and linters became blends of the residual cotton and of the seed fuzz. The quantity of this form of cotton, generally spoken of as the "cut" per ton, rose between 1900 and 1910 from about 25 to 50 or more pounds per ton of seed. As a result much of the linters became hardly fit for spinning and their

use was diverted to the manufacture of mattresses and other feltings and to industries requiring them as a source of cellulose.

During the World War the demands of the Government for material for explosives forced an even more intensive delinting. So complete did the delinting then become that the long fibers were cut or broken, practically all of the fuzz was removed, and even the seed coat itself was so closely abraded that considerable hull particles were included in the linters so produced.

Uses Found for Linters

As yet, however, no discriminating market had developed demanding a study of the character of this product. With the coming of peace, however, it was found that linters could be used in the manufacture of a great number of valuable articles and that the different blends of the long and the short fibers obtainable by adjustments of the delinting machines, were each specially fitted for the manufacture of a particular group of products into which the linters could be converted.

This diversity of uses resulted in a more discriminating market and increased price differentials. In 1900 linters brought less than 1 cent a pound; during the war the price was fixed at 4½ cents a pound, but soon after the war the price paid for the highest types was above 14 cents, while the lowest type brought about 2½ cents. Out of these circumstances a demand arose for a scale or grades on which the oil mills might remove linters and the consumers of linters might purchase. In May, 1924, the industry made a joint request that the United States Department of Agriculture study the commodity with a view to constructing standard grades.

These studies disclosed (1) that the long fibers found in linters were chiefly composed of the abnormally soft and weak fibers that because of their flaccidness had not fluffed during the curing of the seed cotton but had remained matted about the seed and thus escaped ginning; (2) that the uses for which linters had found a place were directly correlated to the different blends of long fibers and seed fuzz that resulted from the variations in the mechanical settings of the reginning or delinting machines.

The third finding was that there were certain characteristics, such as color, harshness or softness, smoothness or neppiness that were usually peculiar to certain geographic sections, possibly in some way related to climate, soil, or cultural methods, and that these sections might roughly be grouped as the southeastern States of the Cotton Belt, the Mississippi Valley States, and the western or Texas-Oklahoma district.

The fourth result of the studies was the finding that both the sectional characteristics of linters and the blends of fiber were discernible to the eye as well as discoverable through the sense of touch.

Situation Reduced to Order

These four determinations enabled the department to bring into order factors which had appeared a hopelessly confused hodgepodge. The gamut of linters was reduced to seven groups or grades, each

grade representing the three sectional characters of linters as well as the mixtures or blends of fibers usually to be found in individual bales. These grades passed the test of a year's use as tentative standards and on August 1, 1926, they became the official standard grades for American cotton linters, promulgated under the cotton standards act.

G. S. MELOY.

COTTON Growing in One-Variety Communities The lines of progress to be followed in the improvement of the cotton industry are becoming more clearly defined. Increasing costs of production in the United States are stimulating the development of cotton growing in many countries, so that in a few years the effects of competition may be felt. If high prices continue, the foreign competition undoubtedly will increase, and less of our cotton will be exported unless it is of better quality than the foreign product. Our short, uneven, low-grade cotton that competes in foreign markets with the cotton of India and China is becoming unsalable, except at prices that are entirely unprofitable to the grower.

The production of larger quantities of inferior low-grade cotton has been accompanied by a corresponding decrease in the production of the better staples, and manufacturers have been complaining of the increasing difficulty of obtaining the large, even-running lots of fiber they require. Automobile-tire manufacturers in particular are becoming alarmed as they find it more and more difficult to locate adequate and regular supplies of fiber from 1 to $1\frac{3}{16}$ inches in length, used largely in tire construction.

It is unnecessary to grow any of the very short and irregular cotton that the foreign buyers are beginning to reject, to become a "drug on the market," and depress the prices even of the better staples. There is no occasion to grow cotton of less than 1-inch staple in any part of the United States, and staple up to $1\frac{1}{8}$ inches or longer can be grown over a much wider area than is now producing such fiber. The continued planting of inferior varieties and irregular "gin-run" seed is a mark of the backward state of our cotton industry that should be corrected as rapidly as possible.

Superior Varieties Bred

Superior varieties have been bred that are as early and as productive as any of the inferior short-linted sorts, and are adapted to conditions in the different cotton-growing regions. The problem of utilizing such varieties and replacing the inferior seed stocks has also been studied carefully, and a simple method has been found that opens the way to a general improvement of production.

In order to utilize superior varieties of cotton, adequate supplies of pure seed must be developed and maintained. This is a self-evident basic requirement for improved production, but one that has been almost entirely neglected in the past. Much of the crop still is raised from mixed gin-run seed (which should have been sent to the oil mill instead of being planted), but there is no supply of

really good uniform seed to take its place. Of the approximately 500,000 tons of seed required to plant the American cotton crop, fully 90 per cent is of mixed "gin-run" quality.

The present system does not provide or even permit the production of adequate supplies of pure seed. Though there are thousands of farmers in each of the cotton-growing States who appreciate the need and are anxious to plant and to raise good seed, the farmer as an individual finds himself practically powerless when he attempts to establish and maintain a pure stock of cotton. On

FIG. 58.—Wagonloads of seed cotton, each from a different farm and each with a different variety. These follow each other at the public gin where the seed from the different loads is unavoidably mixed. The subsequent planting of mixed seed is followed by cross-pollination in the field and varietal deterioration. In communities where the farmers grow only one kind of cotton there is no mixing of seed at the gin and the purity of the variety can be maintained

account of the public gins that regularly mix the seed of different varieties together, and the crossing of the different kinds in the fields, cotton varieties "run out" rapidly under the usual conditions of production. (Fig. 58.)

Pure Seed in One-Variety Communities

It is only in communities where the growers organize and restrict themselves to the planting of one kind of cotton that the seed can be kept pure, and the regular production of a superior variety is made possible.

Organization may be urged upon cotton growers for the same general reasons as for other crops, but cotton has a special community feature, the product of many farmers going to the same gin. The cotton industry should have been placed on a community basis when public gins supplanted the former system of private or plantation gins, but methods changed gradually and consequences were not considered. Ginning is done with less labor by the modern high-power equipment, but the public gin system has made it very difficult to keep seed pure, or to have superior varieties in general cultivation.

The present system of growing cotton from mixed seed was not devised by anybody, and serves no purpose that would not be served much better on a one-variety basis. Not only are the crops smaller and the fiber of poorer quality under the present system, but the industry is burdened with a complicated and expensive system of grading and classing of the present irregular crop, in attempting to make up the "even-running lots" that the manufacturers require.

The planting of one kind of cotton injures nobody, but is to the advantage of every producer. It is the simplest and cheapest improvement that could well be imagined, and yet the most fundamental and effective improvement. The basis of production is changed from mixed gin-run seed to pure uniform seed at no loss or expense to the farmer that is not at once repaid many fold.

Twofold Advantage in Plan

The advantage of community production comes in two ways—the community cotton is of better quality and can be sold at a higher price. An individual farmer, if he is able to get good seed, may raise as good a crop as a farmer in an organized community, but he has a smaller chance of getting a higher price for a few bales than his neighbors who planted gin-run seed. It is no satisfaction to the farmer to raise better cotton if he can get no more for it. A few bales of good cotton can not be sold at the full price, but communities can sell in commercial quantities. The community conditions are necessary to get the full price for the cotton, on the basis of a regular production of large quantities of uniform fiber through a period of years.

The advantages to be obtained by community production of such a variety as the Acala were estimated several years ago at 5 cents a pound, a figure which was reached in some of the sales of the last season in California. The advantages have been so definitely recognized in California that a special act was passed by the State legislature in 1925 for the protection of one-variety communities.

The one-variety communities, by producing commercial quantities of the same kind of cotton every year, are establishing special market relations that unorganized communities could not possibly attain. The community product as a whole is of standardized even-running quality, much more uniform than the miscellaneous product of mixed-variety communities can be made by the most careful sorting and classing of the bales. (Fig. 59.)

In the modern manufacturing industry, cotton is required in large quantities of uniform fiber. Manufacturers are not interested in a few bales of cotton or a few hundred bales. Their problem is to

have a regular supply of thousands of bales of the same kind of cotton, not in one season only but a supply that can run through a long period of years.

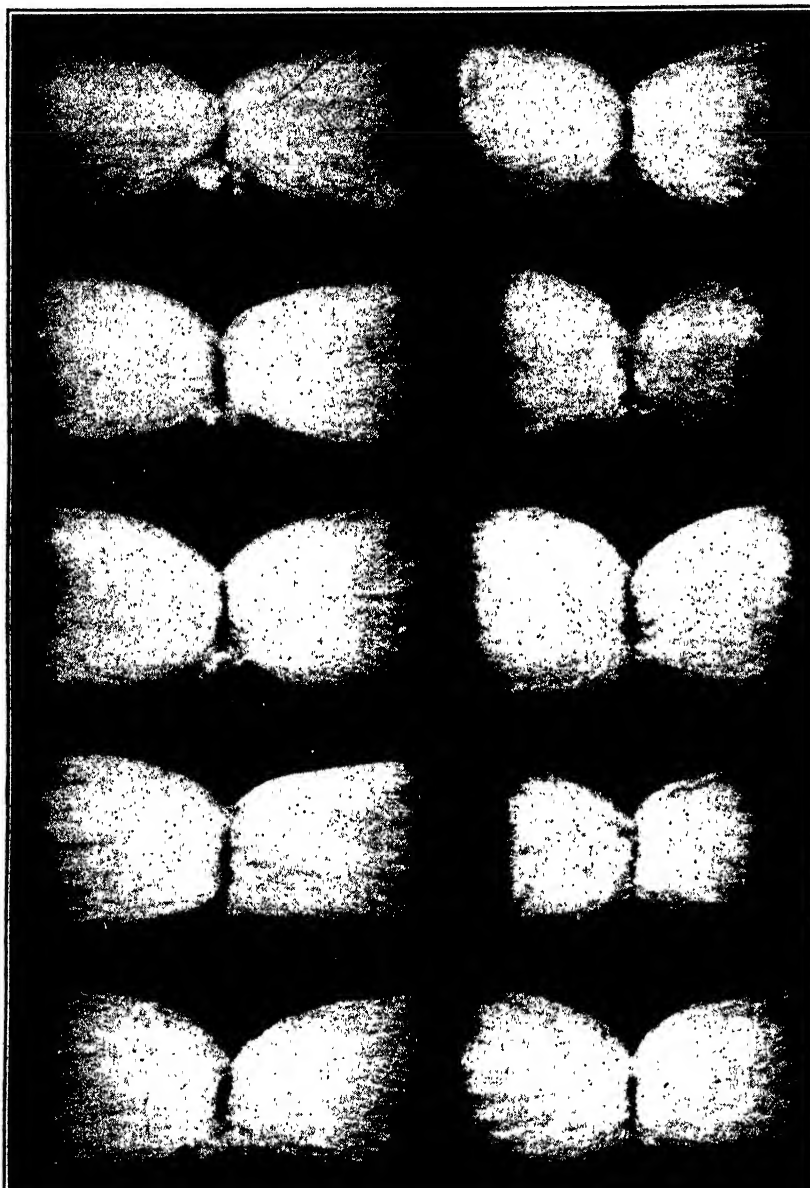

FIG. 59.—On left, uniform fiber of superior quality produced in a one-variety community from pure selected seed of one kind of cotton; on right, irregular and wasty fiber of poor quality produced in a mixed-variety district from "gin-run" seed. (Natural size)

From the nature of the cotton plant, it is out of the question to produce uniform fiber from mixed seed, but the farmers of organized

communities become more skillful as they become more familiar with the behavior of one variety, so that larger and more uniform crops can be obtained.

From the experience of the organized progressive communities in California, it is plain that the growing of one variety is a basic improvement of the system of production, essential to a full utilization of superior varieties and of other improvements. So many other advantages are being demonstrated that it can be only a question of time for the community system of production to become general.

C. B. DOYLE.

COTTON Lint Research Cotton is probably our best example of a strictly commercial farm crop. No part of it is consumed on the farm in the raw state. Some of the seed may be used for planting and some may be fed to cattle, but not to best advantage. The custom is to sell even the seed to an oil mill and to buy cake and hulls for feeding and seed for planting.

The most important problem connected with the marketing of this product is that of determining its quality as expressed by the trade in terms of grade, staple length, and elements of character, including luster or brightness, drag, and uniformity. The process of determination is known as classing.

Even when cotton is classed by the most expert of classers, there often arises a difference of opinion as to its classification, for cotton classing at its best is nothing but the best judgment of cotton classers.

Cotton is grown primarily to be spun into yarns, most of which are to be woven into cloth for countless uses. The higher the quality of the cloth, the greater must be the utility of the raw cotton used in its making. The value of the cloth depends, other things being equal, upon this utility.

Just as the chemist and his laboratory are necessary as a check upon the judgment of a feed inspector, so are the cotton fiber, spinning, and cloth laboratories essential to a proper checking of the work of cotton classers, for only in this way is it possible to define and describe accurately any logical set of standards for grade, staple, and character.

The farmer is as much concerned in the accuracy of cotton standards as the spinner or the manufacturer, because he should be paid for his cotton in accordance with its spinning quality, or spinning utility. If he is to produce cotton of a higher quality, as is persistently demanded by spinners and the trade generally, he must be paid for the extra effort necessary to produce this quality. So long as he is unable to see any difference in his remuneration between the growing of cotton of low and of high quality, he will remain indifferent as to quality and devote his efforts to the production of quantity.

Cotton-Fiber Laboratory

In accordance with this demand for greater accuracy in cotton classing, the Bureau of Agricultural Economics, working in coopera-

tion with the Bureau of Plant Industry and certain State colleges and experiment stations, has developed a cotton-fiber laboratory within the department and a cotton-spinning laboratory at Clemson College, S. C., in cooperation with Clemson College. These studies, though rather new, are beginning to yield information upon which a solution of the more important problems of cotton production, marketing, and manufacture may be based.

The grower stresses productivity in a variety of cotton, but the manufacturer demands high spinning quality as the chief requisite. A correlation of the requirements of grower and manufacturer may be effected by the production of a cotton possessing not only productivity but also high spinning value.

FIG. 60.—Laboratory maintained by the Bureau of Agricultural Economics in Washington, D. C., where all fiber investigational work is conducted and where determinations of the final yarn strength and of moisture in the cotton are made. This laboratory is equipped with the most modern humidifying and dehumidifying systems and testing machines

As a first step plant breeders and cotton organizations have been studying various cultural methods as applied to the development of early-blooming, storm-resisting cottons of the big-boll type producing not only a large yield per acre but a high percentage of lint cotton, and varieties have been developed which are very satisfactory from the standpoint of yield. It remained to be determined as a second step whether such varieties would prove equally satisfactory from the standpoint of spinning value.

Thus the spinning tests of the cotton-testing project of the Bureau of Agricultural Economics have been developed in direct response to an evident need and resultant demand. The project has great possibilities as a link between grower and manufacturer in that spinning

test data show the grower which productive varieties best meet the demand of the manufacturer and acquaint the manufacturer with the varieties which possess high spinning quality. The market necessarily must feel the favorable effect of any movement which shows the interests of producer and manufacturer to be identical. The constant and increasing demand for tests and test data reflect the practical value of cotton testing.

A method of measuring those factors which determine spinning quality of cotton was the need. This field of research must supply information upon which to establish standards for strength and uniformity of staple, in addition to those for grade and color which are now in universal use. Such standards would be of great service in the marketing of cotton and would accomplish more than any other one thing in getting farmers to improve the quality of the staple.

Spinning Tests Conducted

Some 60 spinning tests have been conducted during the past year. These tests include (1) eastern and western cottons representing the nine white grades of the universal standards for American upland cotton; (2) cotton from various sections of the Cotton Belt, that is North Carolina, South Carolina, Texas, Oklahoma, Arizona, New Mexico, and California; and (3) two varieties imported from Egypt.

These tests were conducted at Clemson College, S. C., in cooperation with Clemson Agricultural College, and, with the exception of those of the nine white grades and the two Egyptian varieties, were made at the request of cooperators.

Fiber investigations have been continued throughout the year with a view to searching out the relationship between the characteristics of fibers and their spinning value. These studies, as well as the yarn-strength tests, were made in the laboratory at Washington, D. C.

Research in raw cotton supplies scientific data on many factors. Among them are (1) the relative waste, spinning, and bleaching qualities of different grades, staples, and varieties of cotton subjected to various cultural and weather conditions; (2) determination of the varieties of cotton best suited to particular localities; (3) determination of the effect of varying the conditions of gathering, ginning, baling, compressing, and handling cotton; (4) spinning data for an economic study of the problems pertaining to the production and marketing of cotton; (5) spinning data on the specific yarn numbers into which special cottons may be manufactured for use in connection with cotton utilization problems; and (6) data regarding fiber length and strength and other factors in an effort to correlate these characteristics with yarn strength.

Spinning quality is governed largely by grade, length, strength, and uniformity of staple. Although weather conditions during the growing and harvesting seasons are an important factor in determining the quality of cotton, the varietal characteristics of body and uniformity of staple are also important factors, and these can be largely controlled by the grower. The spinning tests and fiber investigations so far made indicate that the length of the staple accounts for approximately 61 per cent of the strength of the yarn and that the

strength of the staple accounts for about 11 per cent of the strength of the yarn. The department's tests have consistently shown that a lack of uniformity in staple increases waste, causes high end breakage in spinning (thereby lowering the production in manufacture) and produces yarn irregular in diameter and strength.

Pure Varieties Best

An interesting fact brought out in a number of spinning tests is that pure varieties are superior to mongrel cotton in respect to waste, strength, and evenness of yarn, and in machine efficiency, and that mixed cotton of irregular staple is unsatisfactory for general spinning purposes. This lack of quality caused by the irregularity of the staple is usually reflected in the market price of the cotton, and although this fact may be obscured in country buying it is evident in the larger markets. In cotton manufacturing one of the most particular operations is the selection of uniform bales of like quality, suited to the specific work at hand. This selection is facilitated by production of superior varieties and the advantages of the reduction of the hazard of mixed staples are now generally recognized. When a community is equipped with test data showing to what degree each of its leading varieties possesses the two qualities of productivity and spinning value, that community is fitted to make an intelligent choice of the variety best suited to its particular conditions.

From the manufacturer's point of view, the selection of uniform, even-running, and well-ginned lots of cotton is essential. To bring about a closer coordination between the spinner's requirements and the farmer's product, spinning tests have been made of the different standard grades of American upland white cotton. These tests show that the percentage of visible waste follows the grade, ranging from approximately 5½ per cent on grade No. 1 or middling fair to 14½ per cent on grade No. 9 or good ordinary, and that the finishing qualities of the lower grades are not so satisfactory as those of the higher grades. These standards for grade and staple, established by the Department of Agriculture, not only facilitate the selection of even-running lots of cotton but serve to acquaint the growers with the qualities that should be attained in both breeding and production. They also aid the grower in obtaining a price more commensurate with the quality that he produces.

Results of tests of picked and snapped cottons from Texas and Oklahoma, although not presented as conclusive, indicate that snapping as a method of harvesting lowers the grade of the cotton by about two grades; that, with efficient boll-extracting equipment, the strength and uniformity of the cotton are not noticeably affected; that the percentage of visible waste in snapped cotton is not materially greater than in picked cotton of equal grade; and that, taking these results as typical, at the officially quoted prices and under the conditions which prevailed in 1925, snapping cotton resulted in a loss to the grower of $7.29 a bale as compared with picking. But there were times during the year when greater discounts were assessed against the cotton, because it had been snapped combined with the fact that it was sold in the seed, the losses in these cases running approximately from $14 to $27 per bale. It should be stated that

the farmer resorted to snapping because of a dearth of pickers. His loss due to snapping was probably less than would have been the case had he resorted to pickers.

Spinning Value Testing

Up to the present time plant breeders have been unable to obtain determinations of the spinning value of new varieties of cotton until the production was large enough for spinning tests and it usually required a period of years to produce such a quantity. In case these new varieties failed to meet spinning requirements, their development was an economic loss to the grower and to the cotton industry as a whole. A real need existed for an adequate laboratory method by which the breaking strength of yarn could be predetermined by the use of a small sample of raw cotton, even so small a quantity as the product of one plant. Such a method was developed and a device invented by the Bureau of Agricultural Economics in cooperation with Clemson Agricultural College.

This method was first used with considerable success in a test of eight lots of cotton grown in South Carolina during 1925. In an effort to correlate the length and strength of fiber with yarn strength the eight lots of cotton used in this test were graded and stapled, and then spun into yarn, which was tested by the usual skein method. Representative samples of the raw stock were tested for strength by this laboratory method by means of which several thousand fibers in bundle form were broken simultaneously. From the data thus obtained the statistical division of the Bureau of Agricultural Economics developed two equations by which the strength of 28s and 36s yarn may be estimated with some degree of accuracy when the length and strength of the raw cotton are known. Upon applying this method to 33 lots of cotton grown in North Carolina, South Carolina, and Texas, the staple length of which ranged from thirteen-sixteenths to 1¼ inches, the estimating formula for strength of 28s yarn as originally developed was subject to but slight change.

This method will no doubt be subject to further slight change as more extensive tests are conducted and as various factors influencing yarn strength, as yet undetermined, are measured with some degree of accuracy. But the results already obtained indicate the possibilities of the method. Of the 33 lots of cotton tested by this method, only 11 showed a variation of more than 6 per cent between the actual and estimated strengths of 28s yarn.

H. H. Willis.

COTTON in the Texas Plains Area Near the south end of what we now call the Great Plains, once known as a part of the "Great American Desert" lies that well defined geographic area called the Staked Plains. Until about 1860 this region was the winter range of the buffalo. After the Civil War, the region was gradually occupied by cattle, at first temporary and later permanently.

Practically everybody, assumed that the lands could never be crop-farmed; hence, stockmen, by a somewhat lenient interpretation of the Texas land laws, acquired the large areas, often amounting

to hundreds of thousands of acres, that were necessary to the profitable use of the natural short-grass forage of the region, and settled down to cattle and sheep raising. As early as 1885 settlers demonstrated in many parts of these Plains that crops of certain kinds could be produced, at least part of the time, and the crop farmer has gradually pushed his way into the very heart of this stronghold of the big range stockman.

Census reports show an increase of about a million acres in cropped land on the Staked Plains between 1919 and 1924, and rapid expansion is still going on. By 1925 practically all the stock was removed from the region and any of the land could be bought for farms. Coincident with this expansion of the farm land area railroads have built new branches, new towns have come into being, old towns have doubled and trebled their populations, good roads have been built, schools and colleges have sprung up, and business has prospered. Perhaps the most surprising thing about this expansion of the crop-farmed area is the part which cotton has played in the reorganization.

Further Development Possibilities

The explanation of this rapid expansion of crops into a region from which crops, especially cotton, were supposed to be forever debarred is one of the interesting agricultural stories of the last 10 years. And there are still millions of acres in native grass, that may be and perhaps will be cultivated.

The land above the cap rock is level to gently rolling and the tillable soils are mostly light and easily worked when properly moist; hence, cultivation of large fields with large equipment is easy. These new soils are now fertile; hence, the application of fertilizers is unnecessary, at present. The weeds of world-wide distribution are not yet common in this region and it is possible that some of them never will be.

Even the scanty and at times insufficient rainfall is advantageous from at least two points of view. The dryness keeps out many weeds that would otherwise come in and makes weed killing easy work as compared with what must be done in a humid region. This same dryness has so far rendered the cotton-boll weevil harmless in the region and will probably continue this service.

Perhaps nothing has been quite so important to the crop farmer of this region as the introduction of the various sorghums, unless it be the adaptations of these crops to special regional requirements brought about by the work of the Federal and State agencies concerned. The permanence of crop farming in the region seems almost to rest upon the production of kafir and milo and Sudan grass, or their immediate relatives. These are the common feeds for livestock of the region and the varieties now available can be depended upon there with as much assurance as wheat or corn in the more humid regions. Together with livestock these crops alone make possible a type of farming in no way dependent upon cotton and assure the continuance of crop farming in this region.

Reliability of the Cotton Crop

The appearance of cotton as a reliable crop in this region was a surprise to everyone but those concerned in its introduction. Cot-

ton has been produced in merchantable quantities in every county included in the Staked Plains region, though the areas cultivated have been progressively smaller toward the northern, western, and southwestern borders. Correlating this known distribution with available data concerning soils, climate, and relief of the region, the following generalization may be made: Cotton may be expected to produce crops worth harvesting, at least part of the time, in this general region, on sandy or loamy soils that do not puddle, where the normal annual rainfall is 17 or more inches, of which 75 per cent or more falls during a growing season that averages 185 or more days.

Cotton is probably descended from dry-land ancestors. Cultivated cotton possesses two dry-land characteristics which are important to the farmer: (1) It will wait relatively long periods for rain if it has established a root system, and (2) a decrease in the available soil moisture during the growing season causes the plant to begin blooming and fruiting. The first of these characters warrants the farmer in feeling little anxiety about yields, if he can get a good early stand, and the second makes him plant the seeds close together in the row and omit the chopping, so that plants will be somewhat crowded and begin to set squares early.

The two principal physical difficulties farmers must overcome are soil blowing and poor germination of seed. These both result from weather conditions (cold, dry spring) that vary in intensity from year to year with the climatic cycle of the region. Unfortunately, they are likely to occur together and both are worse in a dry year. Cotton will grow and is grown on the heavier soils, but with considerably increased risk.

Crops planted in deep furrows, in long, straight rows, laid off across any slope the land may have and, if possible, at right angles to the prevailing wind direction, is the farmer's answer to the farm practice problem. A two-row lister planter with a six-mule team and a set of fenders, knives, disks, and points have made it possible for him to plow and plant the land in one operation, if necessary, and to cultivate the crops with much less man and horse labor than is expended by the negro cotton farmer farther east.

Tractors for Row Cultivation

The tractor adapted to the cultivation of row crops is important in this region, since it enables the farmer to get his seed planted when the soil is in the proper condition, thereby getting a good early stand. A cotton picker that, experimentally, has done the work of 12 or 15 hand pickers and has done it better is already a reality. Improvements in ginning processes have made practicable the harvesting of the unopened bolls by cheap methods. A variety of cotton better adapted to the conditions and practices of this region is a possibility if not a probability from the breeder's standpoint.

With these improvements, all of which tend to reduce the cost of production, it seems safe to reach the following conclusions as to the physical possibilities of cotton production in this region: (1) Cotton farming along the eastern half of the Staked Plains is assured; (2) as one moves westward the growing season becomes pro-

gressively shorter and drier and the risk of failure in cotton growing increases rapidly as the western boundary of the plains is neared; (3) cotton can be grown in the New Mexico counties of the Staked Plains only part of the time.

Under such conditions what may be a fair estimate of the probable further expansion of the cotton-producing area in this region?

Considering the Staked Plains as a whole, if proper allowance be made for waste land, there are over 15¼ millions of acres of land that may be used for crops and pasture in Texas and more than 4¼ millions in New Mexico.

If we assume that the eastern half of the region in Texas can be organized safely on the basis of 40 per cent of the tillable area in cotton, the western half on a basis of 20 per cent in cotton, and the part in New Mexico with 10 per cent in cotton, and that total be reduced one-third to eliminate the heavy soils of the region upon which cotton is quite uncertain, we get approximately 3,200,000 acres that may go into cotton.

Area Harvested in 1924

The total area of cotton harvested in 1924 in this region was 1,269,600 acres, with an average yield of 149 pounds of lint per acre, in Texas, and 22,700 acres, with an average yield of 85 pounds per acre, in New Mexico. A conservative estimate of the probable expansion of the cotton acreage in the Staked Plains region based upon physical conditions alone then becomes about one and one-half times the acreage in cotton in 1924. This expansion would mean an increase in production of approximately a half million bales.

What of the economic conditions? Detailed studies of owner and part-owner operated farms in Lubbock County, Tex., show that the average net income per farm received for its operation by the family for the year, after paying all interest on borrowed capital (and including the value of that part of the family living furnished directly by the farm as part of the farm receipts), was for 139 farms, over $3,000. Three men lost money, 10 per cent of them made less than $1,000, but 13½ per cent made over $5,000, and the remainder made between $1,000 and $5,000. These incomes were obtained on farms averaging 232 acres in size, valued at $68 per acre, with 37.6 per cent of the land in harvested cotton having an average yield of 148 pounds of lint, selling at an average price of about 20 cents per pound. The average net worth of these farmers when they settled in the region was just over $5,000 per man and on March 1, 1925, the corresponding figure was $18,000, the difference having been made by the operation of the farm and its own increase in value in an average period of operation of 5.84 years.

The figures are taken from a large enough number of farms to furnish reliable averages for the county and the county is one of 8 or 10 that have had closely similar experience within the last decade. All things considered they probably present a picture of that part of the Staked Plains which can most surely rely upon cotton farming as a basic industry.

E. O. Wooten.

COTTONSEED Grades Are to Be Issued Under the present system of purchasing cottonseed for crushing purposes, the prices paid by the oil mills are reflections of the average quantity and quality of the oil and cake recoverable from the seed. As the quantity and the quality of both the oil and the cake are affected by local conditions and customs, quotations become sectionalized because of local seasonal conditions and known cultural and handling practices. As a rule no rewards are paid on local markets for seed of higher yields of either quantity or quality. Moreover, values are frequently upset by reckless competition for seed.

During the crushing season of 1925–26 the Department of Agriculture began a study of cottonseed to determine whether it is possible to grade them for crushing purposes in the primary markets. These studies indicate that cottonseed may be graded on the basis of their kernel content and official grades will be established as soon as the necessary apparatus and proper methods for grading are worked out.

Of the total value of the four products of cottonseed—oil, cake or meal, hulls, and linters—the combined value of the oil and cake constitutes between 85 and 90 per cent; therefore, the factors in the raw seed that affect the quantity and the quality of these two products are paramount in determining the value of the seed at the time of purchase.

Oil in the Kernels

The oil is contained in the kernels or meats and the meal is ground cake to which, in some instances, hull bran is added as a diluent in the production of meal of a standard protein content. The kernel content has been found to vary from 40 to 60 per cent or from 800 to 1,200 pounds of kernels per ton of seed, owing to combinations of foreign matter, both dirt and water, and to variations in the relative proportions of hull and kernel correlated with the size of the seed and the thickness of the hulls.

Considerable variation is found in the oil content of the kernels, the range being from about 25 to approximately 40 per cent, but this variation in oil is largely offset by the fairly constant inverse ratio correlation found to exist between the oil content and the protein content, which permits varying quantities of inert hull to be blended with the cake in forming meal of a standard protein content. The result is that the difference in value between seed of equal kernel content, but of extremes of oil content, is much more narrow than is the difference in value of seed of equal oil content, but of extremes of kernel content. Thus, the quantity of the kernels, or meats, per ton of seed is the first factor influencing the value of the seed.

Kernel Content Basis

As a result of these findings it has been suggested that the grading of cottonseed for oil-mill purposes might be done in the primary markets on the basis of the kernel content.

If the average kernel content, at a standard of moisture, be taken as a basis, increases of kernel—the result of growing improved varieties and of the use of better cultural and handling practices—will receive rewards, and contra, reductions in kernel content below

the basis which result from poor cultural methods and improper handling practices will receive due discounts.

Studies of quality are now being carried on. These are being directed (1), to determining what transitions in cottonseed are deleterious and their causes, (2) to finding accurate methods for determining the percentage of deterioration, and (3) to evaluating degrees of damage.

G. S. Meloy.

COUNTY Extension Agents The extension system as developed since the Smith-Lever Act went into effect on July 1, 1914, has been based on placing a technically trained and practically minded agricultural agent and home demonstration agent in each rural county of the United States where there is sufficient farming population to justify the expenditure required, and a boys' and girls' club agent and a negro agent in counties where there is a demand for the services of such agents and where sufficient funds are available.

These agents make their homes in the county in which they work and have a centrally located office usually equipped with files, record facilities, telephone, and other office equipment. An automobile for field work and needed clerical assistance are frequently provided for by the county authorities. The agents systematically visit among the farming people of the various communities in their counties, suggest demonstrations and improvements on the farms and in the homes in the communities visited, and are consulted by farmers and members of their families in the office or over the telephone. These county extension agents serve as a connecting link and as a clearing house for information between the State colleges of agriculture, the United States Department of Agriculture, and the local people.

The county extension agents are called upon to handle a great many matters of importance to farmers and farm women, some of which require highly specialized training. To meet this situation, a corps of extension specialists in such subjects as agronomy, horticulture, farm management, foods and nutrition, textiles and clothing, and marketing is usually maintained, with headquarters at the State agricultural college, to help the county extension agents with their more specialized problems. Supplementing the State specialists is a small corps of Federal extension specialists, who carry to the States matters which the Federal Government has ready for extension and who act as carrying agents and a clearing house of information for all the States. It is, likewise, through these various county, State, and Federal extension agents that the State and Federal research forces are kept advised as to the needs of the farmers for additional research.

To assist these field agents, most State colleges of agriculture have developed strong editorial departments to prepare instructive publications and to keep the public informed of extension progress through the press.

Growth in Extension Staff

The extension staff in 1914 included 881 county agricultural agents, of which number 678 were in 15 Southern States. Of the latter, 38 were negro agents working with negro farmers and farm boys.

There were 349 home demonstration agents, all of whom were located in the Southern States. These agents gave about a third of their time to the work, their main activity being the promotion and instruction of girls' canning clubs. Of these home demonstration agents, 12 were negro agents devoting themselves to the problems of the negro farm family. The various States employed approximately 221 full and part time specialists, most of whom were in the Northern and Western States. In addition to the above State and county field forces, there were various supervisors for the several lines of work.

On June 30, 1926, the cooperative extension personnel had grown to 2,270 county agricultural agents and 114 assistant agents well distributed throughout the States. Of this number, 163 were negro agents. There were 968 county home demonstration agents and 21 assistant agents. The larger number of home demonstration agents were located in the Southern and Eastern States. Of these home demonstration agents, 107 were negro agents located in the Southern States. In 1926 all home demonstration agents were giving practically full time to the work. There were also 128 county boys' and girls' club agents and 12 assistant club agents.

C. B. SMITH.

COW-Testing Tales Prove Breeding and Feeding Pay The 10 true tales told in this short article may not be stranger than fiction, but it is believed that each contains an element of human interest and teaches a valuable lesson in dairying. The tales are taken from the results of cow-testing association work, a cow-testing association being an organization of dairy farmers who cooperatively employ a man to test their cows for economical production of milk and butterfat. The tester visits each farm one day each month, weighs the feed and milk of each cow in the herd, tests the milk for butterfat, and figures the results.

1. High production per cow and large income over cost of feed are usually found together. This holds true for the cows in each cow-testing association, for cows in many associations combined, and even for cows in the individual herd.

One large cow-testing association herd furnished the yearly production and income records of 106 dairy cows. These records were sorted into three groups with an average butterfat production of 100, 200, and 300 pounds, respectively. The cows of the 100-pound group had an average yearly income over cost of feed of $16 per cow; those of the 200-pound group, $70; and those of the 300-pound group, $109. On an average, the cows of the third group produced three times as much butterfat per cow as those of the first group, and they brought in more than six times as much income over cost of feed.

Poorest Cow's Earnings

2. In one cow-testing association the poorest cow brought in just enough income over cost of feed in one year to buy a 2-cent postage stamp. A man would have to milk a large number of such cows over a long period of time to obtain enough net income to buy himself a pair of shoes.

3. In a certain cow-testing association in the year 1924–25 one herd was fed no grain. Perhaps the owner thought he was saving

money. In dollars' worth of feed per cow he fed his cows less than was fed to any other herd in the association.

It seems probable that the cows in that herd went to bed hungry every night, but before the end of the testing year they got even with their owner. As compared with other herds in the association, they produced the least milk and butterfat per cow and brought in the lowest gross income per cow and the lowest average income over cost of feed. It never pays to try to save money by starving dairy cows.

4. In the Ottertail, Minn., cow-testing association in 1924–25, the average production of all the cows on test was 7,983 pounds of milk and 299 pounds of butterfat. That is a good record of production, but associations that produce 300 pounds of butterfat a year per cow are more numerous now than they were a few years ago.

On an average all the cows on test in the association returned a little more than $3 for every dollar's worth of feed consumed. But the best part of the story, from the standpoint of the farmer, is that on an average each cow returned yearly $101 income above feed cost.

A cow that returns $3 for every dollar spent for feed is a good feed market. A cow that each year returns $100 above feed cost is a good labor market. If a farmer owns a herd of such cows and desires to increase his yearly salary $100 all he needs to do is to keep another cow like those he already has.

How Useful is Guesswork?

5. Sometimes we hear a dairyman say that he does not need to join a cow-testing association because, without testing, he knows how much his cows are producing. Does he? Figures recently received from two cow-testing associations show that he does not know with any great degree of accuracy.

At the time they joined the cow-testing association, 14 farmers estimated the production records of their dairy cows. Each farmer estimated the milk production of his cows, and 5 of them also estimated the production of butterfat. Altogether, the estimates included the yearly milk production of 102 cows and the yearly butterfat production of 48 cows.

Compared with actual production of milk and butterfat as shown by the cow-testing association figures, the error in the estimates for both milk and butterfat varied from less than 1 per cent to more than 50 per cent. On an average the error was 25 per cent on production of milk and 28 per cent on production of butterfat.

6. In one year's time a scrub cow produced 146.8 pounds of butterfat. Her daughter sired by a scrub bull produced 126.3 pounds, and the granddaughter sired by the same scrub bull produced 99.7 pounds, just a trifle more than the world's record for a goat. The owner finally woke up, sold the scrub bull to the butcher, and purchased a good registered bull.

In many of our dairy herds to-day, culling should begin with the elimination of the sire. Breeding to inferior bulls may pull production down as fast as the culling of low-producing cows builds it up.

7. A city girl was working on cow-testing association records. After spending about a week checking feed records from all parts of the country she remarked: "It seems to me that the cows that live on straw don't give very much milk."

She had learned in a week what some men do not seem to learn in a lifetime—that straw is not a first-class feed for dairy cows.

Low Producers Cause Loss

8. During the year 1924–25, there were in one cow-testing association two herds of 21 and 9 cows, respectively. The larger herd averaged 158 pounds of butterfat a year per cow; the smaller herd averaged 294 pounds. The larger herd averaged $32 in income over cost of feed per cow; the smaller herd averaged $74. In total income over cost of feed, the 21-cow herd and the 9-cow herd were about equal.

From local sources it has since been learned that although the owner of the larger herd has a big farm, he is about to lose it because of low-producing dairy cows. It has also been learned that although the owner of the smaller herd is still a renter, he has saved some money and is about to buy a farm. He expects to pay for it from the profits of a larger herd of high-producing dairy cows.

9. It is important that a dairy cow should have a large return for a dollar spent for feed but, to the owner, it is vastly more important that she should have a high annual income over cost of feed. If a cow eats $50 worth of feed and returns $100 she returns $2 for every dollar spent for feed. If a cow eats $100 worth of feed and returns $200, she also returns $2 for every dollar spent for feed. The returns per dollar spent for feed are the same in each case; yet one cow has a yearly income over cost of feed of $50, and the other a yearly income over cost of feed of $100, or exactly twice as much. The figures are not imaginary because they represent what frequently takes place in cow-testing association herds.

For example, in one association in 1925, herd No. 4 had an average yearly butterfat production of 221 pounds per cow; herd No. 1, a production of 399 pounds. As there was only 2 cents difference in the price received per pound of butterfat, the figures are fairly comparable. Herd No. 4 ate $47 worth of feed per cow and returned $100, thus leaving $53 income over cost of feed per cow. Herd No. 1 ate $95 worth of feed per cow and returned $189, thus leaving $94 income over cost of feed per cow. In each case the cows returned approximately $2 for every dollar spent for feed, but the cows in herd No. 1 had almost twice as much income over cost of feed per cow as those in the other herd.

All the figures the tester records in the herdbook are of interest to the owner, but he is most interested in income over cost of feed per cow. That is the income from which the wide awake, up-to-date, progressive dairy farmer may swell his bank account.

Feeding Too Much for Profit

10. Though the well-fed dairy herd is generally a high-producing and profitable herd, it is possible to feed too much for profit. This was the case with one herd that had an average butterfat production per cow of 376 pounds. At the end of the testing year that herd had eaten so much that the average cost of feed per cow was $44 more than the entire gross returns from the sale of butterfat.

Evidently the owner of this herd was trying for first place in the association in average production of butterfat per cow, but even in

that respect he did not succeed because his herd ranked third in average butterfat production. He did succeed, however, in placing his herd at the foot of the list in average income over cost of feed, because no other member of the association was as careless about feed costs.

It is seldom that a cow-testing association herd is overfed to any great extent. One of the arguments for cow-testing association work is that it enables the farmer to follow the rule, Feed grain according to known production. That farmer broke this rule, for which he was forced to pay a heavy penalty in loss of income.

These 10 true tales indicate the great value of cow-testing association work. Production and income climb together. The owner of low-producing cows may work hard but he earns little. The cow that is poorly fed is not a paying proposition, but the high-producing cow is an excellent feed market. The cow-testing association records prove that it pays to keep good cows and to feed them well.

J. C. McDowell.

COW-Testing Associations a Factor in Low-Cost Dairying Economical production is the keynote in successful agriculture to-day. This is especially true in the dairy industry. The dairyman who produces milk at a low cost per pound of butterfat is in a safer position than his neighbor who does not. The records from thousands of cow-testing association herds prove conclusively that on the average the high-producing cow is the most economical one, the high-producing herd is the most economical, and the association with the higher production is likewise composed of more economical animals.

The position of the cow-testing association herds among the dairy herds of our country is an enviable one. The directory of these organizations for January 1, 1926, shows 777 in operation testing 327,000 cows on 19,000 farms. By July 1, 1926, the movement had a further gain, and at that time approximately 840 associations were in active operation. These herds—some purebred and some grade—are on a high plane in the dairy production world.

It is estimated that the average dairy cow in this country produces 4,368 pounds of milk per year, which contains about 175 pounds of butterfat. The records recently tabulated for thousands of cow-testing association cows indicate that they average slightly more than 7,200 pounds of milk containing about 282 pounds of butterfat. In a study of 18,000 yearly individual cow records it was found that cows producing 175 pounds of butterfat had a return over feed cost of $34 per year, those with a production of 282 pounds returned $68 after the feed had been paid for, and those with a production of 300 pounds returned $74. The difference in gain between the 282 and the 175 pound cows is 61 per cent in production and 100 per cent in returns above feed cost. Between the 300 and the 175 pound cows this difference is 71 per cent in production and 118 per cent in returns above feed cost. Two cows of the 175-pound-production group would not furnish as much income over feed cost as one cow of the 300-pound group.

Returns from Cows Compared

In 50 associations in Michigan tabulations have been made to show the relation between the production of butterfat and the returns per cow after the feed had been paid for. The following figures show this relation for six groups of cows in that State averaging from 150 to 400 pounds of butterfat a year.

TABLE 5.—*Relation of butterfat production to income over cost of feed and other factors*

Average production of butterfat per year (pounds)	Cows	Butterfat	Value of product	Total feed cost	Returns over feed cost
	Number	*Pounds*	*Dollars*	*Dollars*	*Dollars*
150	337	154	85.31	50.00	35.31
200	1,022	203	112.15	59.55	52.60
250	1,788	251	140.15	66.75	73.40
300	2,011	299	166.49	73.93	92.56
350	1,575	348	199.04	82.47	116.57
400	902	397	226.87	90.31	136.56

It will be noticed from the above table that as butterfat production increased from 154 pounds to approximately 300 pounds, or 94 per cent, the returns over feed cost increased from $35.31 to $92.56, or 162 per cent.

In an association made up of 400 dairy cows producing on the average 154 pounds of butterfat per annum the returns over feed cost would be $14,124. On the other hand, an association in which the cows averaged 300 pounds of butterfat would return $37,024 after paying for feed. Therefore, the same quantity of butterfat would be obtained from 206 cows of the 300-pound class as from 400 cows of the 154-pound class. Furthermore, the returns over feed cost for the 300-pound association would be $4,943 more than for the association averaging 154 pounds, and nearly 200 fewer cows would need stable room, feed, and care. Surely it pays to keep the higher producing class of dairy cows.

Large numbers of individual herds in this country have averaged over 300 pounds of butterfat per cow per year, and many associations have reached this high mark. Of 563 associations whose records have been summarized in the past 12 months, 171, or 30.4 per cent, have exceeded the average of 300 pounds per cow. In one State with records of 40 associations, 5, or 12½ per cent, have exceeded this mark, and in another State with 92 associations tabulated, 51, or 55.4 per cent, have done likewise.

To be sure, all the cows on test in association herds are not, as a rule, uniformly high producers. This is especially true of herds during the first year of testing work. Cows are like human beings in that a considerable number of them live beyond their income. Through the cow-testing association records the cows that eat up their income are located and are sent immediately to the butcher by their intelligent owner.

Results of Cow Testing

Earlier tabulations of cow-testing association records did not show so large a percentage of high producing herds and associations.

Years of operation of these testing organizations have had their effect. The records of tested cows tabulated about six years ago show an average production of 6,077 pounds of milk and 247 pounds of butterfat. Compared with this, the present average of 7,200 pounds of milk and 282 pounds of butterfat, shows a gain of more than 18 per cent in production over that period. This increase has been made in spite of the fact that new associations have been organized, bringing in new herds that have never been tested before. It could not have been made unless the lessons derived from the keeping of records had been heeded.

The history of a cow-testing association in Iowa with cows testing 300 pounds of butterfat is a glowing tribute to the efforts of the tester and members in applying to their herd management the lesson revealed by the records.

In June, 1923, a group of cooperators in Linn County, Iowa, organized a cow-testing association. Since most of the members were using purebred sires they were on the right track as far as the breeding problem was concerned. The first year's testing showed an average production of 275 pounds of butterfat per cow, which was 17 pounds more than the average production of the cow-testing association cows in that State.

FIG. 61.—A herd of grade Holstein cows in a Virginia cow-testing association whose yearly average per cow was over 300 pounds of butterfat

Reorganization of this association for a second year was easily accomplished, and at the end of that testing year the records showed an average of 301 pounds of butterfat per cow.

The third year's testing showed a further gain, with an average of 325.9 pounds of butterfat per cow. At the end of the third year the 13 herds that had been on test from the beginning averaged 364.4 pounds of butterfat per cow.

Fourth Year's Work Started

The fourth year of testing is under way at the present time, and the value of the work has been demonstrated so conclusively in the

community that two associations are now in operation. Not only has the association work itself grown, but the adoption of better practices in the related farm enterprises necessary to better dairying has also kept pace. During the past year the number of members growing soy beans has increased 50 per cent, and the number growing alfalfa has increased 300 per cent. The tester is in constant touch with the feed markets and suggests the use of purchased concentrates when the price will justify their use. All but three members have silos, and every member feeds his cows according to known production.

It is the aim of the members at all times to make the greatest use of home-grown feeds. To do this they plan to grow the proper kinds of feeds, to obtain large yields, and to market these feeds in the most efficient way. The higher the production of the cows the better the market becomes.

Few, if any, cow-testing association herds will be found that make the 300-pound mark during the first year of testing. This may occur, of course, if the herd owner has previously kept records of his individual animals and used them as a guide in improving his herd. High-producing herds are the result of the application of intelligent business methods and are not hit-or-miss occurrences.

Practically one-third of the present-day cow-testing associations are in the 300-pound class. The members, in general, have followed the constructive guidance of testers in the close selection of their dairy cows, proper feeding methods and approved breeding practices. This has resulted in the building of these associations to a high level of production.

J. B. Parker.

CRATES for Livestock Built to Fit the Animals The breeder loses when stock is shipped in crates that are too small for the animals. The stock is cramped and often injured thereby. The accompanying illustrations (figs. 62 and 63) show standard types of crates developed by the Forest Products Laboratory, cooperating with the University of Wisconsin and the Wisconsin Livestock Breeders' Association. The cow crate allows plenty of head room with the stanchion on the inside, and will take mature cows of any breed of dairy cattle. The same proportions may be used in building crates for larger or smaller animals.

Special features of these crates are (1) slats nailed close together a foot or more above the floor to prevent leg injury; (2) a simple and very convenient end gate; (3) a floor nailed crossways on skids for strength; (4) diagonal braces to prolong the life of the crate.

The simplest method of construction is as follows: Build the floor first, nailing the floor boards squarely across the two skids (cow-crate skids are 2 by 4 inches; hog-crate skids are 2 by 2 inches). Build each side separately, nailing the slats inside of the two uprights, driving the nails through from the inside and clinching them on the outside. Next, put on the diagonal braces and nail uprights and braces firmly to the floor. Nail the slats and braces to top and front end. Build the rear-end gate. Lastly, in the cow crates, put in the stanchion.

Light wood should be used and sevenpenny nails for the 1-inch lumber, with larger nails for the heavier material.

Bills of material for cow and hog crates follow, the first figure signifying the number of pieces required for the length mentioned.

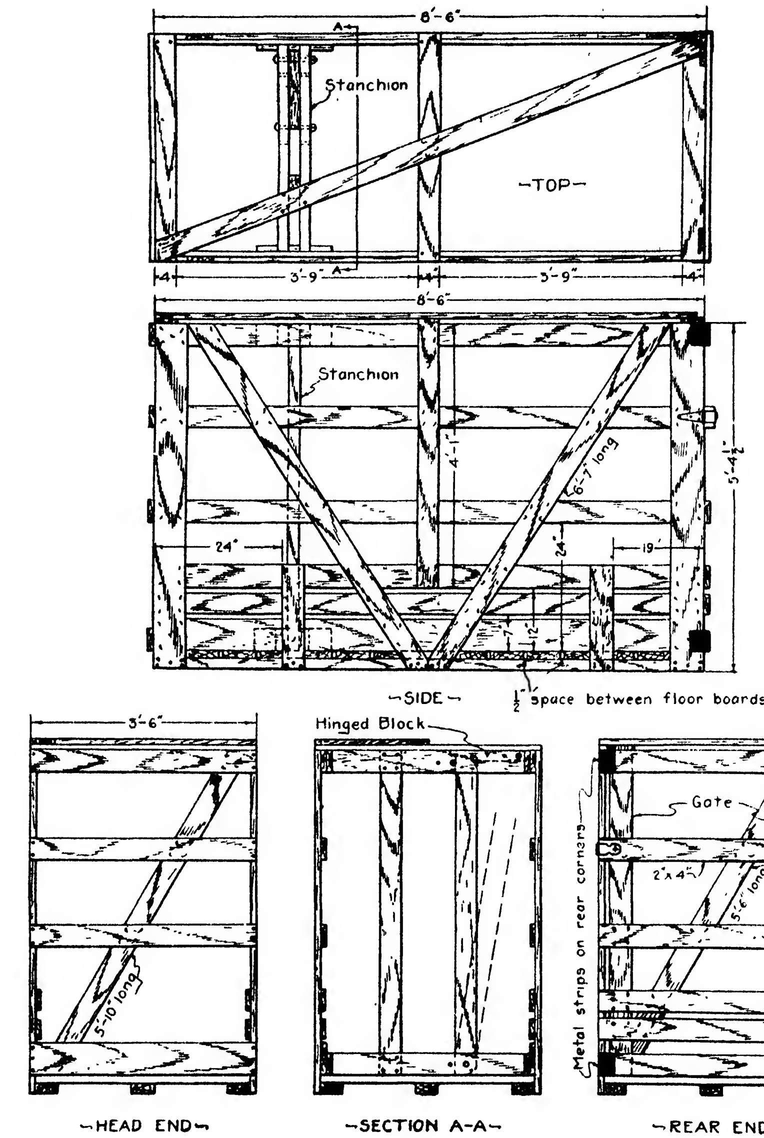

FIG. 62.—Working plans for cow crate

Cow crate. One by four inch material in the following lengths: 4—1 foot 7½ inches; 11—3 feet 6 inches; 2—4 feet 1 inch; 2—4 feet 10 inches; 1—5 feet 6 inches; 1—5 feet 10 inches; 4—6 feet 7 inches; 10—8 feet 6 inches; 1—9 feet. The following lengths in 1 by 6 inch material: 1—3 feet 6 inches; 4—5 feet 4½ inches; 2—8 feet 6 inches. Seventeen pieces 1½ by 6 inches by 3 feet 4 inches. Two-by-fours as follows: 4—3 feet 2 inches; 1—3 feet 6 inches; 2—5 feet; 1—6 feet; 2—8 feet 6 inches.

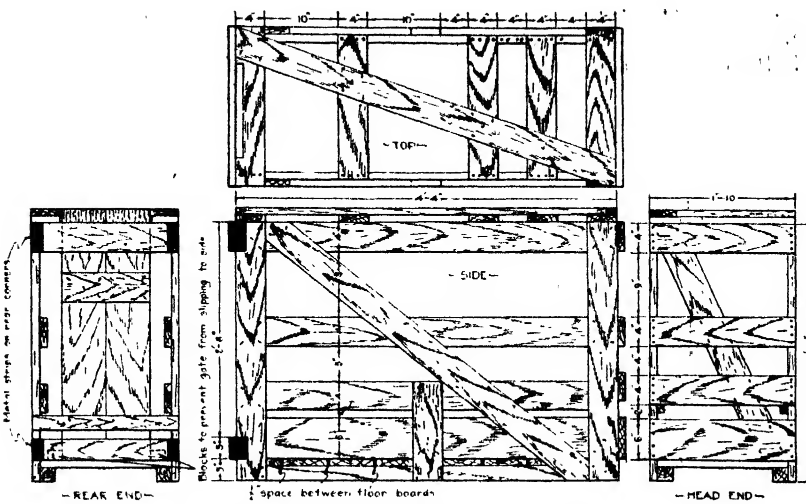

FIG. 63.—Working plans of hog crate

Hog crate. One by four inch material as follows: 1—1 foot; 2—1 foot 2 inches; 3—1 foot 8 inches; 6—1 foot 10 inches; 4—3 feet; 1—3 feet 3 inches; 1—4 feet 2 inches; 6—4 feet 4 inches; 2—4 feet 9 inches. Of 1 by 6 inch material the following lengths: 9—1 foot 8 inches; 1—1 foot 10 inches; 2—2 feet 11 inches; 2—4 feet 4 inches. Two pieces 1 by 3 inches by 1 foot 10 inches. Two pieces 2 by 2 inches by 4 feet 4 inches.

T. A. CARLSON.

CREDIT for the Farmer

The year 1926 was in general a period of abundant loanable funds and declining interest rates. Though costs of agricultural loans as a rule showed little variation over short periods of time, the interest and discount rates on such loans to some extent followed the general trend during 1926. This is true in a limited way of personal and collateral credit for agricultural purposes and even more so in the field of farm-mortgage credit.

Personal and Collateral Credit

Particular interest centers at this time in the operations of the Federal intermediate credit banks and of the various agricultural-credit corporations organized primarily to take advantage of the discount facilities offered by these banks. The intermediate credit banks being regional institutions can not deal direct with individuals but they do loan direct to cooperative organizations, although their primary purpose is to rediscount agricultural paper for banks, agricultural-credit corporations, and other financial institutions. On June 15, 1926, the interest rate on direct loans by the intermediate credit banks was reduced from 5 to 4½ per cent and on July 1 the rediscount rate was reduced from 5 to 4¾ per cent.

The volume of direct loans of the 12 Federal intermediate credit banks on December 31, 1926, was roughly $52,704,000, representing an increase of about a million dollars over the amount of such loans outstanding on the corresponding date of 1925. The rediscounts

of these banks on December 31, 1926, amounted to $39,757,000, representing an increase of $13,500,000 over the rediscounts outstanding at the beginning of the year. Of these rediscounts at the end of the year, approximately $23,864,000 represented paper discounted for agricultural-credit corporations, and about $15,542,000 represented discounts for livestock-loan companies. The remaining $351,000 represented agricultural paper discounted for banks. The service of the Federal intermediate credit banks has been materially greater than the volume of their loans would indicate. As a readily available source of discount for longer-term loans these banks also strengthen and encourage private agencies in meeting agricultural credit needs.

There was a marked increase in the number of agricultural-credit corporations during the year, the number of such corporations rising from 300 at the beginning of the year to about 400 at the close. These credit corporations have in general proved of decided benefit to their members by furnishing production credit at a reasonable cost and on terms in other respects fairly well adapted to the farmers' needs.

The cooperative marketing associations have been instrumental in organizing a number of credit corporations which are managed more or less as subsidiaries of the cooperatives. The latter are interested in having the production program of their members financed as economically as possible on a plan which tends to encourage the use of cooperative marketing organizations.

Farm-Mortgage Credit

In the field of farm-mortgage credit the Federal farm loan system is an increasingly important factor. The net loans of the 12 Federal land banks oustanding at the close of 1926 exceeded a billion dollars, while the loans of the 54 joint-stock land banks was about two-thirds of a billion. This means that banks operating under the Federal farm loan act carried about one-fifth of the total farm-mortgage loans from all sources. Other important sources of such credit are local commercial banks, life insurance companies, farm-mortgage companies, and private individuals.

Seven of the Federal land banks reduced their interest rates during the year from 5½ to 5 per cent, and three others reduced their rates to 5¼ per cent. Two Federal land banks are retaining the old rate of 5½ per cent. The joint-stock land banks have also reduced their rates of interest. A few of these banks are now making loans at 5 per cent, but most of them charge 5½ per cent.

Many private loan agencies have also reduced their interest rates on farm-mortgage loans. In certain localities the farmer now has a choice as to source of loan on a 5 per cent basis. In most sections, however, the rates of private loan agencies continue relatively high and are apparently only slightly affected by the lower rates offered by the Federal and joint-stock land banks. Many farm-mortgage loans are of course made on security that would not be acceptable to the banks in the Federal farm loan system, and where the security is less ample, a higher rate is naturally to be expected. In general, however, there is apparent a tendency toward greater uniformity in interest rates as well as a reduction in such rates among

all groups of loan agencies and for all parts of the country. The low and relatively uniform rates of the banks comprising the Federal farm loan system are undoubtedly a primary factor in bringing about this desirable change.

D. L. WICKENS.
A. N. MOORE.

CREDIT Through United States Warehouse Act The serious condition in which the cotton grower found himself in 1914 resulted in the passage of the United States warehouse act in August, 1916. It was the opinion of many who had given serious thought to the cotton situation that if the farmers did not all try to sell their cotton within a few weeks following harvesting, but placed it in a warehouse and released it as the market could absorb it, that relief would follow.

Few growers of any products are in a position financially to do this. Besides, warehouse receipts covering agricultural products in the hands of the growers had little or no standing for credit purposes. Almost without exception the receipts conveyed no information as to the value of the products. Even the local banker who loaned to the farmer did so, not on the basis of the warehouse receipt, but on the basis of his opinion of the farmer or by virtue of a chattel mortgage against the products.

The framers of the warehouse act aimed to produce a warehouse receipt which would give specific information as to the quantity, grade, and condition of the product, and to have the warehouse receipt form a definite contract between the warehouseman and the holder of the receipt. Their big concern was to draft legislation so that the farmer might be furnished with a warehouse receipt that would make it possible for him to store some of his products at harvesting time and obtain a warehouse receipt on which he could borrow a fair amount of the value of the product. That meant that the law must be so worded as to put value into the receipts in such form that the banker could readily recognize it and to guard that value so long as the receipt was outstanding.

Ten years have elapsed since the warehouse act was passed. During those 10 years all has not been well with agriculture. In 1920 and 1921 agriculture passed through one of its greatest depressions. Has the warehouse act functioned in the meantime? Has it in any measure accomplished its purpose? Has it commanded the attention of bankers? Have they loaned their money on products represented by Federal warehouse receipts, and after having had experience, are they still willing to loan on such collateral? The acceptability of Federal warehouse receipts to bankers is a real test of the value of the warehouse act. Proof of the value of this law can best be demonstrated by accomplishment.

Results in 1921 and 1922

The first several years following the passage of the law had to be devoted to investigational work, to drafting of proper regulations and to educational work with warehousemen, storers of agricultural products, and bankers. But when the agricultural depression of

1920 and 1921 came, then the warehouse act began to attract attention. It was first made use of in a big way by the Mississippi Staple Cotton Growers Cooperative Association. When officials of that Association approached the War Finance Corporation for a loan of $7,000,000 in 1921 and promised warehouse receipts issued under authority of the United States warehouse act as collateral for the loan, their application was almost immediately granted. A few weeks later the application of a tobacco growers' cooperative association for $30,000,000 was granted by the War Finance Corporation. Here again the Federal warehouse receipt was the collateral. Following these applications others were granted for large amounts.

By this time commercial bankers were becoming acquainted with the Federal warehouse receipt. Individual farmers were beginning to find the receipts of real value among their local bankers, while bankers in metropolitan centers were seeking this type of collateral. Other cotton and tobacco growers' cooperative associations, wool growers' associations, peanut growers' associations, and grain growers' associations were storing their products in warehouses operated under this law, and commercial bankers were loaning many millions annually on this collateral, and that, too, at unheard of rates.

Some of the Federal reserve banks early recognized the value of warehouse receipts issued under authority of the Federal warehouse act. The Atlanta Federal Reserve Bank in 1920 called attention of its member banks to the desirability of this type of collateral. The Federal Reserve Bank of St. Louis shortly after made attempts to impress upon its member banks the need for sounder warehousing practices in the agricultural field and shortly afterward adopted a policy that it would not accept as collateral warehouse receipts for agricultural products which were eligible for storage under the United States warehouse act unless such receipts were issued by a warehouse duly licensed under that act.

Intermediate Credit Provided

In March, 1923, came the Federal intermediate credit act. After thorough study of the Federal warehouse act and regulations thereunder, the Federal Farm Loan Board, which administers the intermediate credit law, ruled:

> Intermediate credit banks will accept the receipt of any warehouse licensed and bonded under the United States warehouse act.

Early in 1922 the strictly commercial banks began to be actively interested in loans which would be supported by Federal warehouse receipts. The New Orleans Clearance House Association in June, 1923, expressed the attitude of the bankers of that city in this language:

> *Resolved*, That the New Orleans Clearing House Association, recognizing that Federal Bonded Warehouse Receipts are preferable for collateral purposes, and that the safeguards offered by the Federal Warehouse System, through its selection in admitting warehouses into the system, its supervision and inspection of warehouses, and the bonded responsibility of the warehousemen, are to the interest of financial institutions handling warehouse collateral as well as the patrons of such warehouses, including producers and merchants, hereby expresses itself as favoring the licensing of warehouses under the

United States Warehouse Act, and urges upon warehousemen in the State of Louisiana to operate their warehouses under this statute.

This action was followed by similar or identical action by bankers' associations in other sections.

Bankers Indorse Warehouse Act

In the Pacific Northwest the bankers manifested an interest in Federal warehouse receipts as early as 1920. In the State of Washington the interest was crystallized into action at the annual meeting of the bankers' association in June, 1926, in the following language:

Be it resolved by the bankers of Washington at Walla Walla in their thirty-first annual convention assembled, That we commend all warehousemen in this state who are operating under the United States Warehouse Act and we urge upon warehousemen who are not doing so to qualify under the provisions of the Act. We recommend that in the interest of agriculture in the Northwest and as a means of protection to farmers who store their products with public warehousemen that our members discriminate between applications for loans supported by warehouse receipts issued under the United States Warehouse Act and applications supported by other forms of receipts, and that we each counsel with our farmer and dealer clients with a view of educating them in the advantages of the Federal Warehouse Act.

A large bank in New York City which has loaned many millions on agricultural products at low interest rates and which is ready to loan many millions more, in acknowledging a list of licensed warehousemen which is sent to certain bankers at regular intervals, recently wrote:

In actual practice in this institution, when we find the name of a warehouse on your list we feel it unnecessary to make any further inquiry into its standing, and this fact is of great value to us in our commodity financing operations.

Accurate figures are not available as to the amounts that may be loaned annually on Federal warehouse receipts but a conservative estimate places the total amount well above $500,000,000. Not only are large sums loaned to growers and their cooperative organizations and others handling agricultural products, but frequently because of the character of collateral the loans are made at very decidedly better interest rates than have been offered when other than Federal warehouse receipts constituted the security. A concrete instance of the effect of Federal warehouse receipts on interest rates is the case of a dried-fruit growers' organization which advised that through this type of collateral it was able to get money for 2 per cent less than it could on its former type of collateral. In addition, the interest of banks in metropolitan centers in these Federal warehouse receipts has had a stabilizing influence on local bankers who were sometimes disposed to charge high rates.

Unlimited Reservoir of Credit

The reservoir of credit that is available to agriculture for orderly marketing through the warehouse act seems unlimited, granting that the applicant is entitled to credit. Scarcely a week passes that those who administer the warehouse act do not receive an inquiry from some large banking institution wanting to learn of parties

who may be seeking loans and who can offer Federal warehouse receipts.

The Federal warehouse act has already accomplished the purposes of the framers of the law. It has made sound, orderly marketing possible. It has opened new avenues of sound credit to the farmer and others handling agricultural products. It has a record of accomplishment. It is a reality.

H. S. YOHE.

CROP Acreage by Actual Measuring Evidence of the extent of the yearly changes in the acreages of crops is now being obtained by actual measurements. A simple machine devised by the Government crop reporting service, measures in feet the frontage of fields devoted to each crop along thousands of miles of roads in each important agricultural State.

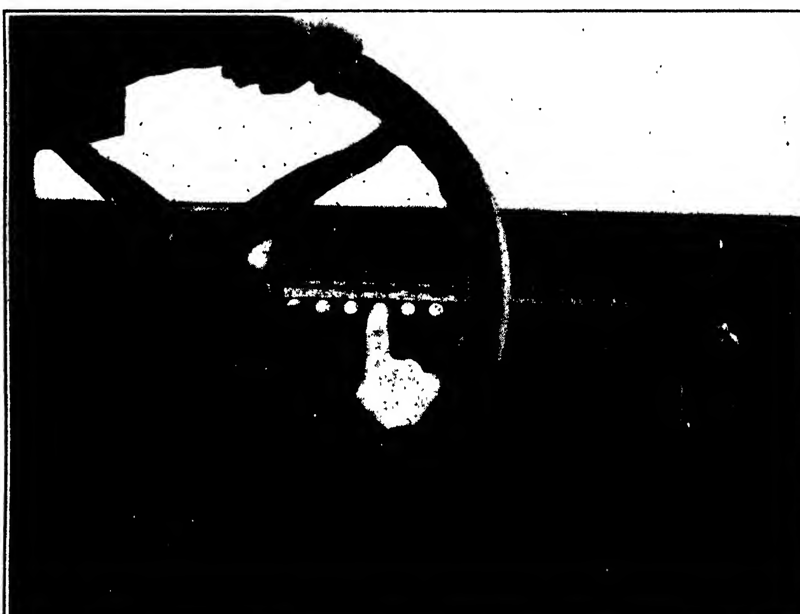

FIG. 64.—The cropmeter is attached to the dash of the automobile and the speedometer. Keys are provided to record principal crops

The new device is installed in an automobile in the same manner as a speedometer and has a dozen or more dials with buttons for throwing them into gear. By pressing the proper button at the corner of each field the frontages of the different crops along the road traversed are separately recorded. Permanent routes selected to give proper samples of each agricultural section are followed year after year. Measurements are made under uniform rules so that all records may be comparable.

The measurements along identical routes in successive years are compared to determine annual changes. If, for example, it were found that the total measured frontage of fields of oats in a particular district on identical routes was 500,000 feet in 1925 and 475,000

feet in 1926, a decrease of 5 per cent in the oats acreage would be indicated.

This method gives results unaffected by personal interest, public propaganda for acreage changes, momentary enthusiasm or discouragement, and other psychological factors that interfere with the accuracy and comparability of figures based upon the judgment or opinion of even those best informed.

Other objective methods for determining acreage changes have been used for many years by field estimators of the crop reporting service. Counting the number of fields devoted to each crop, or of the number of telegraph or telephone poles in front of fields of different crops, along the same route in successive years has been done for about 15 years. These earlier methods were very useful, although they involved more difficulties and were less accurate than the present plan.

S. A. JONES.

CROP Yields per Acre Show Gain Despite common belief to the contrary, crop yields per acre have been rising slowly in the United States during the past 40 years. In fact, a considerable part of the increase in the volume of production of the important food and feed crops during that period has been due to the gradual increase in yields per acre. This increase has been most notable in the long-settled northeastern section of the United States, where some of the land has been supposed by many to be wearing out.

Since the population is growing steadily and the lands of good quality which are easily available for use without reclamation are already largely employed for crop production, the problem of agricultural productivity and soil fertility in their relation to our future food supply will become a more and more important phase of the problem of land utilization.

The future trend of acre yields can be estimated best on the basis of past performances. The average yield per acre of corn in the United States has increased from 23.4 bushels for the 5-year period 1883–1887 to 27.7 bushels for the 5-year period 1921–1925; or about 18 per cent; wheat from 11.9 to 13.9 bushels or 17 per cent; oats from 27 to 30.9 bushels or 14 per cent; and potatoes from 76.9 to 107.4 or 40 per cent (fig. 65). During the past four decades the combined acreage of corn, wheat, oats, and potatoes has been expanded about 52 per cent, whereas the total production of these crops has increased 77 per cent. It is evident, therefore, that nearly one-third of the increase in the production of these four crops can be assigned to increase in yield per acre, while two-thirds is owing to expansion of the acreage (fig. 66.)

The rise in the yield per acre of these crops during the past 40 years has made available, on the average, during the half decade, 1920–1924, about 440,000,000 bushels more of corn, 120,000,000 of wheat, 165,000,000 of oats, and 115,000,000 bushels of potatoes, or in all over 800,000,000 bushels of the four feed crops more than would have been realized under the yield level prevailing at the beginning of the period.

Most of the increases in acre yields have occurred in the older farming regions east of the Mississippi River, thus disproving an-

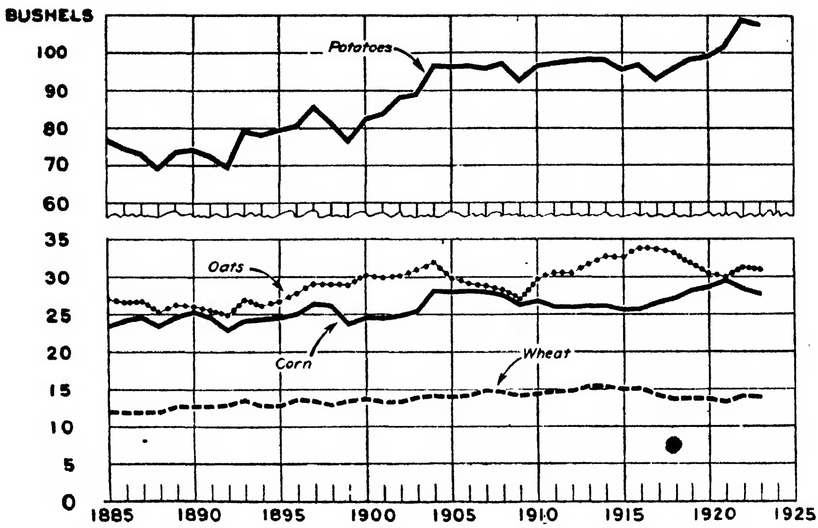

FIG. 65.—Yield per acre of corn, wheat, oats, and potatoes for United States, five-year moving average, 1885–1923

other erroneous impression that farms in the older areas of the United States in general have become worn out. The record of the past four decades indicates that the outstanding increases in yields have been in the North and South Atlantic States, with lesser increases in the eastern North Central States. In a general way these sections comprise the oldest farming regions in the United States. The soils in these regions have already entered or are now entering the period of permanent use, the pioneer methods of the past century having largely passed away. Similar changes have occurred in many portions of the western North Central States where pioneer agricultural methods have disappeared.

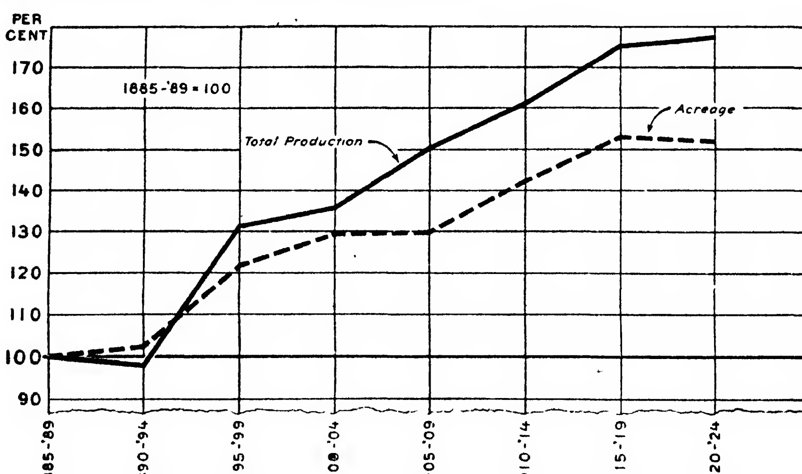

FIG. 66.—Trend of combined acreage and total production of corn, wheat, oats, and potatoes in the United States, 1885–1889 to 1920–1924

In the case of corn yields especially, a marked rise has taken place in the northern portion of the South Atlantic States. Virginia and North Carolina corn yields have increased 10 and 12 bushels per acre, respectively, during the past 40 years, and Maryland yields over 14 bushels. In New England the increase is over 10 bushels, and in the other North Atlantic States the increase has been from 6 to 10 bushels per acre according to the State, while Iowa and Minnesota show, respectively, increases of 8 bushels and 6 bushels per acre.

Rise in Wheat Yields

The record of wheat yields for the several States shows a rise during the period of 5 to 6 bushels per acre in the northeastern portion of the United States, although in Ohio and other States in the Ohio Valley the general upward trend was interrupted by a marked decrease in the average wheat yields for the period 1920–1924, largely the result of unfavorable weather during the first three years of that period.

Despite the expansion of the wheat area in Kansas into the semiarid portions of the State, yields have remained practically stationary for the entire 40 years, because the lower yields of the newer semiarid areas have been offset by increased yields in the older humid portion of the State. Yields in Missouri on a considerably expanded wheat area have remained low, notwithstanding a temporary increase in the 5-year period just before the war. They are now about where they were 40 years ago. Statistics of yield per acre seem to suggest that the southern part of the Corn Belt, as represented by Missouri and eastern Kansas, has lagged behind the northern portion, as represented by Iowa and Illinois, in the development of agricultural practices and soil-management methods that tend to raise the acre yields of important crops.

Pioneer Methods Delay Progress

In the spring wheat region the persistence of pioneer methods and the continued expansion of wheat production into drier areas have prevented a rise in the State averages. Moreover, since moisture is commonly the limiting factor in crop production in the semiarid portions of the Plains States, it appears probable that this part of the United States will not experience, at least in equal degree, the tendency toward rising acre yields which is shown by the statistics for the Northeastern States.

It seems safe to presume that developments in the coming years with regard to acre yields will depend, as in the past, to a great extent on the prices of agricultural products. Rising values of food products normally would result in increasing intensification and a higher level of soil productivity through the wider use of better cultivation methods, development of suitable rotations, including the growth of legumes, more efficient use of crop residues and animal manures, greater use of commercial fertilizers, and the more common use of selected seed. It seems not unlikely that in the course of time acre yields in the humid, northeastern portions of the United States may approach the present standards in northwestern Europe, which

are about a third higher than in our Northeastern and eastern North Central States in the case of wheat and oats, and fully 40 per cent higher for potatoes.

B. O. WEITZ.

CUCUMBER Mosaic and How to Control It Cucumber mosaic is one of the most serious diseases affecting the cucumber in the Eastern, Central, and Southern States. Mosaic plants are dwarfed, the younger leaves are mottled with green and yellow, and the fruits are also mottled and misshapen; the darker areas forming warty projections on the surface. The cause of mosaic is unknown, but the juices of mosaic plants contain an infective principle or virus which produce the disease when introduced into wounds in healthy plants. The disease is disseminated chiefly by insects, particularly the melon aphis, *Aphis gossypii* and, to some extent, by the striped cucumber beetle, *Diabrotica vittata*, and the 12-spotted beetle, *D. 12-punctata*. It is also spread by the handling of mosiac and healthy plants. The most effective control for the disease consists in the elimination of the agencies by which it is carried over winter.

Mosaic does not live in the soil and is not carried in the seed of the cultivated cucurbits, but is known to live from year to year in certain wild plants, some of which occur in most of the cucumber growing sections. The known wild hosts are the wild cucumber, *Micrampelis* (*Echinocystis*) *lobata*, milkweed, *Asclepias syriaca*, two species of wild ground cherry, *Physalis subglabrata* and *P. heterophylla*, and catnip, *Nepeta cataria*. Unlike the cultivated cucurbits, the disease is carried in the seed of wild cucumber, but the other hosts are perennial, the roots of mosaic plants sending up mosaic shoots each year. The insects which carry mosaic in the field also feed on these wild hosts in the spring and the disease is thus transmitted to the cultivated cucumber.

In a number of fields where the average mosaic infection had been approximately 40 per cent, it was reduced to 3 per cent after the eradication of wild host plants. As a result of these experiments, the following methods are recommended for the control of cucumber mosaic: Cucumbers should not be planted continuously on the same land and the field should be some distance from the farm buildings. Mosaic perennials accumulate about land which is constantly planted to cucumbers and are often common about farm buildings. Before planting, the field itself and all land within 75 yards should be carefully inspected and all plants of the species listed above, whether healthy or mosaic, should be pulled out.

In the case of the pokeweed the large roots should be dug out or otherwise destroyed. This inspection should be repeated every 7 to 10 days during the season. If the cucumber field can be surrounded by other cultivated crops, the work of eradication will be simplified and insects are likely to be less prevalent. Where mosaic cucumber plants appear early in the season they should be removed immediately to prevent further infection and it is also advisable to use insecticides to reduce the number of insect carriers of the disease. If carefully followed, the above procedure should greatly reduce the losses from

mosaic under ordinary conditions but, where several fields are adjacent to one another, it is essential that all growers cooperate in removing the wild hosts about their fields.

S. P. Doolittle.

Cyanides and Hydrocyanic Acid in Farm Operations If you ate an orange for your breakfast this morning and it came from California, the chances are very good that that orange was protected from insect pests in the early stages of its growth by the use of hydrocyanic-acid gas. Thousands of tons of this interesting substance are now used annually for that purpose. The usual method of application is to cover the tree to be treated with a tent under which the hydrocyanic-acid gas is liberated either by (1) simply opening a can of liquid hydrocyanic acid, which vaporizes to give the gas at ordinary temperature, (2) treating sodium cyanide with sulphuric acid, or (3) exposing a quantity of solid calcium cyanide, a comparatively new substance on the market, which is acted upon by the moisture of the air, to give hydrocyanic-acid gas.

The value of hydrocyanic acid as an insecticide and fumigant is by no means limited to citrus fruits, although that outlet is doubtless the most important. It has also been extensively used in the fumigation of greenhouses, flour mills, warehouses, the holds of ships, and residences, as well as for the extermination of rats and mice. The chief drawback to the use of hydrocyanic-acid gas is its deadly poisonous character, which necessitates extreme care to thoroughly ventilate before reentering a room after fumigation.

This versatile class of substances, the cyanides, has found extensive use in still other directions. Sodium cyanide has the property of dissolving gold and silver from their ores and it has been possible by making use of this principle to recover values from ores which could not have been economically worked under the older methods. Considerable quantities are also required as an essential constituent of the solutions from which gold, silver, and other metals are plated onto metal surfaces.

Sodium Cyanide Obtained

In the manufacture of these substances, sodium cyanide is practically always obtained either as the final product or as an intermediate step in the preparation of hydrocyanic acid or calcium cyanide. Sodium cyanide contains the chemical elements, sodium, one of the constituents of common salt, carbon, and nitrogen. The older method of manufacture consisted in treating sodium at a high temperature with powdered coke and ammonia gas obtained as a by-product in the making of coke from coal. It has long been known that sodium cyanide is one of the comparatively few nitrogen compounds which may be made directly from the nitrogen of the air. This has been accomplished commercially in recent years by heating a mixture of soda ash and coke (with a small proportion of iron) in the presence of nitrogen gas. A third method for the manufacture of sodium cyanide consists in melting lime-nitrogen—the primary product which United States Nitrate Plant No. 2 at Muscle Shoals, Ala., was designed to produce—with common salt.

If hydrocyanic acid is desired, sodium cyanide is treated with an acid, usually carbonic acid, and the hydrocyanic-acid gas resulting is condensed to a liquid, for convenience in handling, by refrigeration. Calcium cyanide is obtained by treating calcium carbide, such as used in acetylene-lighting plants, with liquid hydrocyanic acid.

E. W. Guernsey.

Dairy By-Products and Methods of Utilizing Them In the manufacture of butter, cheese, and casein very large quantities of skim milk, buttermilk, and whey are produced. The total quantity of these by-products produced in the United States in 1924 was 22,724,340,000 pounds of skim milk from butter making, 1,356,080,000 pounds of buttermilk, and 4,320,223,000 pounds of whey; a total of 28,400,643,000 pounds. Some of this is delivered at factories where it is available for manufacturing purposes; but the greater part, particularly the skim milk, is retained on the farms and fed to animals. Although it may at times be used inefficiently it can not be considered a waste product. In city milk plants the skim milk, for lack of any market, is sometimes run into the sewer. This is also true of buttermilk in some of the creameries located in cities. Whey is usually carried back to the farms from the smaller cheese factories. In some cases, however, it is not only a waste product but a nuisance, on account of the difficulty of disposing of sewage containing so much putrescible material.

Skim milk, buttermilk, and whey contain material entirely suitable for human food. These include protein in an easily digestible and assimilable form; milk sugar, which is valuable not only for its food content but also for certain physiological effects; a relatively small quantity of fat; and salts in a combination especially suited for human nutrition. Table 6 gives the quantity of food material in each of the dairy by-products, the total of which is over 2,500,000,000 pounds. Of this nearly 900,000,000 pounds is protein, the most expensive of our food constituents.

Table 6.—*Quantity of dairy by-products produced annually in the United States*

	Skim milk		Buttermilk		Whey		Total
	Per cent	*Pounds*	*Per cent*	*Pounds*	*Per cent*	*Pounds*	*Pounds*
Casein	2.75	624,919,000	2.8	37,970,000	0.10	4,320,000	667,209,000
Albumin	.80	181,794,000	.8	10,840,000	0.75	32,400,000	225,034,000
Total protein		806,713,000		48,810,000		36,720,000	892,243,000
Lactose	5.25	1,193,025,000	4.4	59,667,000	4.80	207,370,000	1,460,062,000
Ash	0.80	181,796,000	0.7	9,492,000	0.60	25,921,000	217,209,000
Fat	0.10	22,724,000	0.1	1,356,000	0.35	4,320,000	28,400,000
Total solids		2,204,258,000		119,325,000		274,331,000	2,597,914,000

This immense quantity of food material may be better comprehended by considering that 7,400,000 prime steers, which is only a little less than the total number of cattle slaughtered in Federally inspected plants in 1924, would be required to produce the protein contained in our 28,000,000,000 pounds of dairy by-products. The desirability of utilizing the greatest possible quantity of this mate-

rial as human food is too obvious to need discussion. It is true that the greater part is now converted into human food by feeding it to calves, pigs, and poultry. In utilizing it in this way it should be kept in mind that milk, which is eminently suited for human nutrition, has been made from roughage which can not be utilized by man. In feeding milk to farm animals we are merely converting it into food in a new form and using for this purpose animals capable of making human food from material unavailable to us. Moreover the changing of skim milk to pork or poultry results in a decided loss in food value.

Table 7 is obtained by assuming that 6.4 pounds of digestible nutrients is required to produce 1 pound of edible pork, and 23.4 pounds to produce 1 pound of edible fowl.[4]

TABLE 7.—*Available quantity of food produced if all skim milk, buttermilk, and whey were fed to hogs or chickens*

	In by-products	In pork	In fowl
Protein...pounds..	892, 243, 000	52, 557, 000	21, 427, 000
Carbohydrates...do....	1, 460, 062, 000		
Fat...do....	28, 400, 000	139, 028, 000	18, 096, 000
Ash...do....	217, 209, 000	9, 133, 000	1, 110, 000
Total dry edible matter...do....	2, 597, 914, 000	200, 718, 000	40, 453, 000

Feeding to Animals Unavoidable

Notwithstanding the inefficiency of this method it will probably be necessary for many years to come to utilize a large proportion of dairy by-products by feeding them to animals. In the meantime it is highly desirable that means be perfected and put into practice for converting as much as possible of these by-products into forms suitable for human use. Since it is difficult to make products from skim milk, buttermilk, or whey which appeal to the human palate, it will be necessary to resort to methods by which they may be incorporated into staple articles of food.

When a satisfactory market can be developed cottage cheese is one of the most profitable outlets for skim milk. A yield of 14 to 17 pounds per 100 pounds of skim milk is obtained, and this may be sold in bulk at from 3 to 6½ cents per pound. The equipment required is simple and inexpensive, and no great technical skill is required in its preparation. Its disadvantages lie in the seasonal variation in the demand and in the short life of the product, which must be marketed within a few days after it is made.

Casein is like cottage cheese in that the equipment required is comparatively simple, and the cost of manufacture is low. Vats for curdling the milk, draining racks with cloths, presses, a curd mill, and a tunnel drier with drying trays are essential. Most of this equipment may be homemade. A yield of 3 to 3½ pounds of casein per 100 pounds of skim milk is obtained, and the cost of manufacture is estimated at 2 to 3 cents per pound. The price, which varies from 7 to 15 cents per pound, does not make this a profitable means of disposing of skim milk, but it has the advantage of being a stable product which can be made whenever milk is available and can be

[4] JORDAN, W. H. THE FEEDING OF ANIMALS, p. 422.

marketed when convenient. From 85 to 90 pounds of whey is obtained from each 100 pounds of skim milk. This may be used in making milk sugar or other products.

Casein is used principally in making coated paper, adhesives, fungicides and insecticides, and other minor products. Recently the manufacture of casein plastics has been developed in this country, and this industry may in time make casein a more profitable product.

Condensed and Evaporated Skim Milk

Ice-cream makers and bakers use milk solids not fat in the form of sweetened condensed skim milk or evaporated skim milk. The former product is made by adding 18 pounds of sugar to each 100 pounds of skim milk and concentrating it in a vacuum pan to about 72 per cent solids. A yield of 37 to 38 pounds per 100 pounds of skim milk is obtained which usually sells at 4 to 6 cents per pound. When properly made this product keeps indefinitely. The evaporated milk is concentrated without the addition of sugar until it contains from 26 to 30 per cent milk solids. This is usually sold in 10-gallon milk cans. Since it is not sterilized it will not keep longer than Pasteurized milk or cream. When a large volume of skim milk is available and the market is favorable these products offer a satisfactory outlet for skim milk; but the investment in equipment, which includes a vacuum pan, coolers, and boilers, is large. If the sweetened product is made a considerable investment in sugar is also necessary.

Ordinary sour milk can not be concentrated satisfactorily because of its tendency to lump when heated and to burn onto the coils of the pan. If the acidity is increased by special cultures to 1.8 or 2 per cent lactic acid it may be condensed to one-third of its volume in a vacuum pan. This gives a smooth, pasty product with sufficient acid to inhibit completely the growth of bacteria and yeasts. When packed in tight barrels or other suitable containers it may be held indefinitely. This product sells readily to poultry raisers at 3¼ to 4 cents per pound. From 30 to 33 pounds per 100 pounds of skim milk is obtained. In addition to the vacuum pan the necessary equipment includes vats for Pasteurizing and souring the milk and an incubator to carry the starter.

Milk Powder

From 8½ to 9½ pounds of dry skim milk can be made from 100 pounds of skim milk. This product sells from 7 to 14 cents per pound. The variation in yield is due to the composition in the milk, the amount of water retained, and the efficiency of the process in recovering the powder. Among the processes now available for making milk powder are the following:

The spray process. The fluid milk, sometimes partially condensed, is sprayed into a current of heated air, which removes the water and leaves the milk solids as a finely divided powder. Various devices are used to separate the powder from the moist air.

The roller or drum process. Steam-heated drums are so arranged that partially condensed skim milk is spread in a very thin layer on the outer surface of the drum. During the revolution of the drum the adhering film of milk dries and is scraped off. This dry film

is reduced to a powder by revolving brushes or other grinding devices.

The vacuum drum process. This is really the roller process with the roller or drum inclosed in a vacuum chamber, thus making it possible to dry the milk at temperatures below the normal boiling point.

The flake process. Partially condensed whipped skim milk is spread on a wire belt which passes through a heated chamber where currents of hot air are directed against it. The dried product is removed from the belt in the form of flakes.

In selecting the type of drier to be installed, creameries should consider the quality of the powder to be made, the labor involved in operation, the recovery of the powder, and the efficiency of the process in utilizing the heat of the drying medium. The cost of drying will vary with the efficiency of the process, the cost of fuel, and various local conditions. It is estimated at from 2½ to 4½ cents per pound exclusive of royalties.

It is usually considered that a milk-drying plant can not be operated efficiently on less than 30,000 pounds of milk daily.

Methods of Utilizing Buttermilk

Buttermilk has a composition nearly identical to that of skim milk, but the chemical effect of the acid developed in ripening the cream and the physical effect of churning have so changed its properties that its possible uses are very limited.

Casein can be made from buttermilk, but it is very difficult to obtain a satisfactory quality even from the best grade.

The acid flavor of any product made from buttermilk makes it difficult to use in any type of cheese. Even buttermilk from sweet-cream butter has a deleterious effect when mixed with skim milk to make cottage cheese.

The most satisfactory outlet for buttermilk at the present time is the concentrated or dried form for poultry and pig feeding. Concentrated to about one-third of its volume in a vacuum pan, it is sold extensively as semisolid buttermilk.[5]

There is a stable market for dried buttermilk through jobbers of feeding stuffs and manufacturers of proprietary feeds. The drying is usually done on steam-heated drums operated at atmospheric pressure. This equipment is less expensive than that ordinarily used in making milk powder.

Methods of Utilizing Whey

Whey contains about 5 per cent of lactose, a sugar found only in milk and possessing certain physiological properties which make it of especial value in nutrition, nearly 1 per cent of completely digestible and assimilable protein, and the greater part of the salts of the milk. Thus the solids of whey have a high food value but are in such a dilute form that it is difficult to utilize them efficiently. Moreover, the sugar is relatively insoluble and low in sweetening power.

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[5] The name "semisolid buttermilk" is a copyrighted trade name, and the process of concentrating buttermilk is covered by patents.

Whey from casein, cottage cheese, or other skim-milk products is low in butterfat; but cheese whey has an appreciable amount of butterfat which in some varieties is as high as 1 per cent. This can be recovered by separation and with reasonable care makes a satisfactory grade of butter.

Certain "appetite" cheeses can be made from whey. These include Mysost or Primost, made by evaporating the whey in an open pan until the sugar crystallizes, and cheese of the Ricotte type, made by coagulating the albumin with heat and drying it in molds.

The market for this kind of cheese is limited and at best offers an outlet for only a small quantity of whey. Aside from its use in feeding, the principal means of utilizing whey is in the manufacture of milk sugar. This requires vats for precipitating and filters for removing the albumin, a vacuum pan for concentrating, crystallizing vats, and a centrifuge for separating the crystals from the mother liquor. Additional equipment is necessary if the sugar is refined. The precipitated albumin is dried in a tunnel drier and sold as poultry feed. About 3 to 3½ pounds of crude sugar is obtained per 100 pounds of whey. It may be sold in this form to refiners at from 8 to 12 cents per pound, depending on the lactose content. The present consumption of milk sugar in this country is only about 4,000,000 pounds per year, and it is very easy to depress the price by overproduction.

It has recently been demonstrated that milk sugar is of great value in combating coccidiosis and other intestinal diseases of chickens. Poultrymen are now buying milk powder to obtain sufficient quantities of milk sugar, and it should be possible to use whey, which has a high milk-sugar content, for this purpose.

In plants where concentrated sour milk is made it is practicable to sour whey and mix it with sour milk before concentration. In this way a concentrated sour poultry feed is obtained with a high milk-sugar content.

L. A. Rogers.

DAIRY Industry in Process of Change There have been a number of important changes in the production of dairy products during the period from 1917 to 1925, inclusive, and while the changes have affected all products, the effect on the industry is more noticeable and far-reaching in those products of largest production, such as butter, cheese, condensed and evaporated milk, and ice cream.

The total quantity of milk produced in the United States has been increased from 87,609,400,000 pounds in 1917 to 116,505,395,000 pounds in 1925, or 33 per cent.

A few changes have been noted in the production of creamery butter, and all are important, for in each change the quantity of milk necessary to make the change has been very large. The production of creamery butter has increased during the period from an average monthly production of 63,293,000 pounds in 1917 to 113,460,000 pounds in 1925. That is, the production has increased 79.2 per cent in nine years. A part of this increase offsets the decrease in the production of farm-made butter, but the exact decrease in the farm-made butter is not of record. The average output per

factory in 1917 was 193,036 pounds and in 1925 it was 366,494 pounds. That is, the production per factory increased 89.9 per cent, due partly to operating more nearly to capacity, but also due to the consolidation of factories.

The proportion of the total milk production of the country used in the manufacture of creamery butter was 17.8 per cent in 1917 and 24.54 per cent in 1925, an increase of 6.7 per cent.

Seasonal Trend of Production

The seasonal trend of creamery-butter production has varied during the period. If the year is divided into two parts, namely, the feeding season (November to April, inclusive) and the grass season (May to October, inclusive), it appears that the trend has been toward an increased production during the feeding season. The increase in proportion of butter made in the feeding season was rapid for the years 1917 to 1920 or 1921. Afterward while the trend continued upward, it was less rapid. In 1917 the proportion of creamery butter made in the feeding season was 36.1 per cent and in the grass season 63.9 per cent. In 1925 the production in the feeding season had increased to 39.9 per cent of the total output, leaving 60.1 per cent for the grass season. These figures indicate that winter dairying for butter production is increasing. There was a sound reason for this change in the production of creamery butter during the period from 1917 to 1925. In Minnesota, for example, the average price of a balanced ration sufficient to produce a pound of butter in 1917, was 24.96 cents, and in 1925, 21.6 cents. The average price of 92 score butter in New York market in 1917 was 42.7 cents per pound. In 1925 it was 45.3 cents. The feed cost had decreased 13.5 per cent while the price of butter increased 6.1 per cent for these two years.

TABLE 8.—*Seasonal production of creamery butter in the United States*

Year	Feeding season, November to April	Grass season, May to October
	Per cent	*Per cent*
1917	36.14	63.86
1919	36.53	63.47
1923	39.84	60.16
1925	39 90	60.10

TABLE 9.—*Cost of feed and price of butter compared*

Year	Feed (balanced ration necessary to produce a pound of butter)	Price of butter (92-score), on New York market	Difference
	Cents	*Cents*	*Cents*
1917	24.96	42.7	17.74
1919	33.22	61.0	27.78
1923	20.97	46.9	25.93
1925	21.60	45.3	23.70

Increased production in the feeding season was to be expected, as the acreage of grassland has been decreasing for years and as during the period mentioned the price of feeds was at a comparatively low level; the economy of home feeding was taken advantage of by the dairyman in the butter-producing sections. The increase accrued to butter rather than to some other product largely because butter is the natural reservoir for all surplus milk of other branches of the industry.

Increase During Feeding Season

Some of the other branches of the industry have had changes in production trends. In 1917 the cheese made in the country utilized only 4.3 per cent of the total milk and in 1925 the percentage had been reduced to 3.8 per cent of the total milk, though more cheese was made in 1925 than in 1917.

The percentage of the total milk produced used in the manufacture of condensed and evaporated milk in 1917 was 3.9, for 1925, 3.8. The output of these two products was greater in 1925 than in 1917.

The ice-cream industry has made very rapid increases in the past few years but still uses only a small percentage of the total milk of the United States. In 1917 the percentage of milk used was 3.3 and in 1925 it was 3.8, while the actual increase in total production of ice cream was 53.7 per cent. As there are practically no imports or exports of this product, production is equivalent to consumption. This branch of the industry is particularly subject to the effects of wide and rapid variations in weather conditions.

Milk used for household purposes, including consumption by bakeries and in public eating houses, affords the largest market of the dairy industry. In 1917 household milk was 41.7 per cent of the total milk produced in the United States; in 1925, it was 46.6 per cent. This increase in consumption was mostly in the cities, where many milk campaigns were carried on and where the health officials stressed the value of clean, safe milk. The per capita consumption of milk increased from 42.2 gallons in 1917 to 54.8 gallons in 1925.

T. R. Pirtle.

DATE Growing: A New Industry for Southwest States The date palm, *Phoenix dactylifera*, was introduced into Florida and California, when these territories belonged to Spain, by Spanish explorers and missionaries nearly two centuries ago. Date palms are still growing in the San Diego Mission at San Diego, Calif., which were planted more than 150 years ago.

Choice varieties of dates can be propagated only by means of offshoots which sprout from the base of the trunk. The first successful importation of offshoots of standard date varieties was made in the summer of 1900 by the United States Department of Agriculture in cooperation with the University of Arizona. These offshoots were planted at the cooperative date garden at Tempe, Ariz., and more than 60 per cent of them lived and are still growing in this garden. They are now splendid palms, 25 to 30 feet high.

Date palms can be grown successfully only in hot irrigated valleys in the southwestern United States. Dates are now grown commercially on a large scale in the Coachella Valley lying just north of

the Imperial Valley about 100 miles east of Los Angeles, Calif. They are being planted on a large scale in the Salt River Valley in Arizona, and on a somewhat smaller scale near Yuma, Ariz., and in the Imperial Valley in extreme southeastern California. Perhaps 25,000 or 30,000 date palms are now planted in California and Arizona in orchard form, and plantings are being extended very rapidly, especially in the Coachella Valley of California and in the Salt River Valley of Arizona.

Setting Offshoots in Orchard Form

Good-sized offshoots properly rooted while still attached to the mother tree can be set out in orchard form in the late spring or early

Fig. 67.—Eight-year-old Deglet Noor date palms in full fruit in private garden near Indio, Calif., October, 1924. Some of these palms yielded more than 200 pounds of fruit

summer and if handled carefully take root within a few weeks and make some growth the first year. They grow rapidly the second or third year and begin to bear the fourth or fifth year, although they do not come into full bearing until the sixth or seventh years; sometimes even later. The young date palms produce abundant offshoots, the number depending upon the variety, ranging usually from 10 to 20 to the palm, but as the palm reaches the age of 10 or 12 years offshoot production ceases. As the date palm is propagated only from offshoots, the slow rate of offshoot production constitutes a natural bar to any sudden expansion of date plantings, for only home-grown offshoots are available for new plantings as the importation of date offshoots from abroad is now impossible under the present quarantine laws except when made by the Federal Government itself for experimental purposes.

It is highly important for anyone proposing to grow dates to realize that the date palm, unlike commonly grown fruit trees, can not be budded or grafted and consequently it is very important that varieties set out be suitable for commercial culture in the region where they are to be grown. Offshoots of good varieties are scarce and expensive, the price ranging from $10 to $25 an offshoot, and if 50 are planted to the acre, as is commonly done, the cost of nursery stock alone amounts to from $500 to $1,250 an acre. If such an expensive planting is brought into bearing and found to be of a variety unsuited to the region, there is nothing to do but dig up the palms at great cost and plant some other variety. It is therefore necessary to test out carefully date varieties in all regions where it is proposed to make date plantings, in order to determine which varieties are most likely to succeed on a commercial scale.

Seedling Dates Inferior

Dates can be grown from seed but seedling dates are usually inferior to the mother variety and probably not more than 1 per cent of the seedlings are of sufficiently high quality to justify planting their offshoots on a commercial scale. Even where a choice new variety is originated in this way it is not possible to get enough offshoots to make any sizeable plantation until 20 to 30 years after the variety is originated. Large plantations of seedlings are hard to manage, too, since each palm is in effect a different variety and it is very difficult to market such a mixed production.

It should be remembered that the date palm is a diœcious plant, the male and female flowers being borne on different palms. Two or three male palms are usually planted to an acre of bearing dates, and the flowers of the female palm are pollinated by hand in the spring. Date palms bloom in January, February, March, and April, but mostly from the middle of February to the middle of April; and ripen in the United States from the middle of August to the middle of December, usually from the middle of September to the middle of November.

Great progress has been made in working out methods for picking, curing, packing, and storing dates, and the American-grown dates are of a much superior quality and appearance to those grown abroad. The quantity of dates now produced in the United States is about 1,000,000 pounds annually, but probably less than one-half of the crop is packed for long-distance shipment. The choice dates produced in this country meet with a ready sale at good prices.

Not Thrifty in Salty Soil

Palms can be grown in salty soil, but do not thrive in such situations unless the roots have access to a layer of soil containing less than 1 per cent of soluble salts. In view of the present high cost of offshoots and the heavy expense of starting a date plantation, it is desirable to set out date palms in the very best fruit land and not attempt to grow them in alkali soil even though the date palm can stand more alkali than any other commonly cultivated fruit tree.

It is probable that date culture will be the leading fruit industry in many of the hot irrigated valleys of the southwestern United

States. It is believed that at least 11 counties lying in southeastern California, southwestern Arizona, and southern Nevada have larger or smaller areas where dates can be grown successfully on a commercial scale. In addition to these 11 counties there is a large area in southern Texas where date palms grow well and where they often ripen fruit. Rains are likely to occur during late summer and fall in most parts of southern Texas and such rains are usually very injurious to ripening dates. It is nevertheless believed that certain date varieties which are resistant to rain and moisture may be grown on a commercial scale in Texas and an experimental trial of the most promising imported varieties is now being undertaken by the Department of Agriculture in cooperation with the Texas experiment station.

FIG. 68.—Oldest date palms of standard varieties growing in California. Two of Rhaar's variety date palms planted at Indio, Calif., in July, 1900. Photographed October, 1924

The climatic hazards of the date are much less than of oranges, lemons, and other citrus fruits. Young date palms are injured by severe cold weather in winter but after the palms are well established they can stand temperatures as low as 15° F. without serious injury beyond the freezing of a few leaves. Dates are much injured by rain and many varieties are badly injured even by dew or excessive humidity during the ripening season. In general, rains and moist weather are the chief climatic hazards of the date grower.

Yields Large Crops of Fruit

The date palm under favorable conditions yields a large crop of fruit, usually from 100 to 200 pounds, when the palms have reached

full size, say 10 years after planting. The cost of picking is low, the curing in the packing house is easily done, and dates can be graded and packed as cheaply as any other dried fruit. The profits from date culture vary greatly according to the skill of the grower and market conditions, and range at the present time from $250 to $750 or even more an acre for plantations in full bearing. Probably the average net annual return is about $500 an acre.

There are many kinds of dates known to the Arabs, probably more than 1,000 in all. More than 100 varieties have been tested in the United States and of these not more than 10 or 15 have proved suitable for commercial culture in this country and only 4 or 5 are being planted on any considerable scale. Among the varieties which are now being grown on a commercial scale are the Deglet Noor from North Africa, the Saidy from Egypt, the Halawy, Khadrawy, and Zaheedy from Mesopotamia, and a few other special varieties grown on a small scale in commercial orchards. Among the latter is the Thoory from Algeria, which is sold as a dry date, and the Hayany from Egypt, which is likely to be sold soft, just as it is picked from the palm, without drying and curing. More than nine-tenths of the date palms planted in the United States belong to the seven varieties mentioned, and more than half are of the Deglet Noor variety. Other varieties, some of them very valuable, exist only in limited numbers as yet in this country and are still under trial, though doubtless some of them will some day become commercially important.

WALTER T. SWINGLE.

DAYLIGHT a Factor in Flowering The flowering of plants is a familiar observation to the flower lover and gardener. Within recent years it has been found that the flowering time of many plants can be controlled in a very simple manner. It has been found that the number of the hours of daylight which is in normal operation in nature can be made a controlling factor. It has been learned that the seasonal flowering of many plants is not as fixed, not as uncontrollable, as the rising and setting of the sun. To be sure, the rising and setting of the sun itself can never be controlled. In nature this regulates the number of hours of daylight over the earth throughout the seasons, thereby fixing more or less definitely the seasonal flowering of many of our plants. Knowing, however, that in nature the hours of daylight may control the flowering period of many plants, it is a simple matter to cut off daylight from experimental plants by placing them in dark houses or dark cases for definite periods each day.

If this is done in summer when the day is long, one can subject the plants to only 8 or 10 or 12 hours of daylight as he pleases. What happens? Some plants flower; some do not. Such plants as Klondyke cosmos, poinsettia, late varieties of chrysanthemums, dahlias, Jerusalem artichoke, African marigold, Orange Prince, the Maryland Mammoth variety of tobacco, and late soy-bean varieties (Biloxi and others) flower long before their normal time in late summer or fall when this is done. Many of our wild late-flowering asters and goldenrods respond in the same manner. While

these fall-blooming plants flower, such plants as bee balm or Oswego tea, coneflower (*Rudbeckia bicolor superba*), the coneflower variety Autumn Sun (*R. nitida*), the garden stonecrop (*Sedum spectabile*), hollyhocks, garden beets, and others do not flower if the day is shortened. They behave otherwise because they require the long days of midsummer in which to flower; and if short daylight periods of 12 hours or less are given them, they grow rosettes of leaves only, just as they do in fall and winter in the field when the days are normally short.

Electric-Light Experiments

We have shortened the daylight artificially; now how can we lengthen it artificially when the wintertime brings us short days,

FIG. 69.—Rumex species, related to sorrel, showing the behavior of plants which require artificially shortened daily light exposures for flowering in the summertime. From left to right the plants were given full daylight, 4 hours of darkening in the middle of the day, and daily exposures, beginning at 5.30 a. m., of 12, 10, 8, and 5 hours of summer daylight. Only the 5, 8, and 10 hour treatments were short enough to induce flowering, which occurred promptly in June. The plants darkened in the middle of the day behaved as if receiving full daylight. The plants receiving 12 hours of light and full daylight did not flower until late fall, when the days were less than 12 hours in length

less than 12 hours in length? Electric light has been used, and in many instances it works when the proper intensity has been given. It keeps from blooming the plants that want short days for flowering, and it hastens into flowering the long-day plants, beets, spinach, radish, Oswego tea, and the coneflowers mentioned above. No matter how warm and favorable other conditions for growth in the greenhouse may be in wintertime, adding electric light from sunset to midnight to obtain long periods of light each day, will make Klondyke cosmos, poinsettias, and many other fall-flowering plants simply grow on and on with no signs of flowering.

Some plants are not so sensitive as these to changes in the duration of daylight. They simply flower whether the day is long or short. The ordinary lengths of day do not affect them. Such are buckwheat, the commercial varieties of common tobacco, and the Mandarin variety of soy beans. It has not only been found that the

flowering of many plants may be artificially hastened or hindered by the proper length of daylight exposures, but it has been found that this response may be localized in particular buds or branches experimentally. In other words, one may give a portion of a plant, a single branch or the top or the bottom of a plant, a daylight exposure of 10 hours, and the rest of the plant a long exposure of 14 to 15 hours or more, such as obtains in midsummer in middle and northern latitudes, and if it is a short-day type of plant, such as poinsettia or Klondyke cosmos, that portion given the short daylight exposures of 10 hours will hasten into flower, while the remaining portions will not flower until the shorter days of fall or winter have arrived.

FIG. 70.—Hollyhock, double yellow variety. From right to left the plants were given 5, 8, 10, 12 hours, and the full daylight of summer. The latter alone flowered. To flower, a daily light exposure of more than 12 hours is required by the hollyhock, as well as many other plants, this being the characteristic behavior of plants which require long days for prompt flowering

This is a very convincing experiment, and shows how wonderful the artificial control of the flowering of some plants has become. How much more is known now than in the beginning. More is known than the mere fact that plants flower somehow. It is known that some plants flower in response to certain rather definite lengths of day, for they have been made to respond to an artificial, experimental short day or long day, just as they do in nature when the seasons in their swing afford them approximately these same daylight periods. The nature of the plant has not been changed in the least, and no reason is known why it should flower when given long or short days. The plants have not been fooled so much as one would believe. If they flower out of season, the poinsettia in June, for instance, it is because some dominant condition of June no longer

affects them. The internal behavior of the plant has not been changed one bit, but a dominant factor of the normal season has been changed—the length of the daylight. So far as known the plant has to respond, and it does respond in one way or another.

Home Demonstrations Possible

If anyone wishes to demonstrate these facts to his own satisfaction, let him obtain some small plants of poinsettia, or grow some plants of Klondyke cosmos in spring and keep them in a very dark, ventilated room or warm, dark cellar, giving them the sunlight each day from 6 a. m. till 3 p. m. Darkening the plants in the middle of the day several hours will not produce these effects. In about a month they will flower quite out of season and prove of no little interest to all who see them and learn the methods which made them flower. In this simple experiment one has worked out a fundamental relation in the behavior of plants, i. e., their growth and flowering responses to the factor of length of day, whether it be a natural seasonal relation or an artificial control of the daylight.

H. A. Allard.

DRAINAGE Ditch Clearing The function of a drainage ditch is to remove excess water from the soil and ground surface. Injury to growing crops after a rain is often averted by the rapid removal of this superfluous water. Any obstruction in a ditch retards the velocity of the moving water and thereby partly defeats the object for which the ditch was intended.

Vegetation is the most common form of obstruction in ditches. Drainage ditches badly choked up with growth are a very common sight in every section of the country. This growth consists most generally of weeds, tall grasses, vines, bushes, and small trees. The generally bad condition of ditches throughout the country would naturally lead one to conclude that very few landowners realize that there is a great difference in the discharge or water-carrying capacity of a cleared and an uncleared ditch.

The presence of vegetation in a ditch indicates either that the landowner is not deriving the full benefit from drainage for which the ditch was intended or if he is receiving this benefit that he has invested his money in a ditch which is larger than would be required if the vegetation were kept out. Apparently the truth of the above statement is not generally accepted by the farmer, so for the purpose of showing definitely to what extent the capacity of a ditch is affected by the growth of vegetation a large number of measurements of the flow of water in ditches before and after clearing and before and after the growth of vegetation were made by the writer and his associates in the Department of Agriculture.

Drainage Good After Clearing

In Figures 71 and 72 are two views of the Lake Fork special ditch near Bement, Ill. One of these views was taken looking upstream and the other downstream over the same portion of the channel.

The view in Figure 71 was taken during July, 1924, when the vegetation in the channel consisted principally of bushy willows which

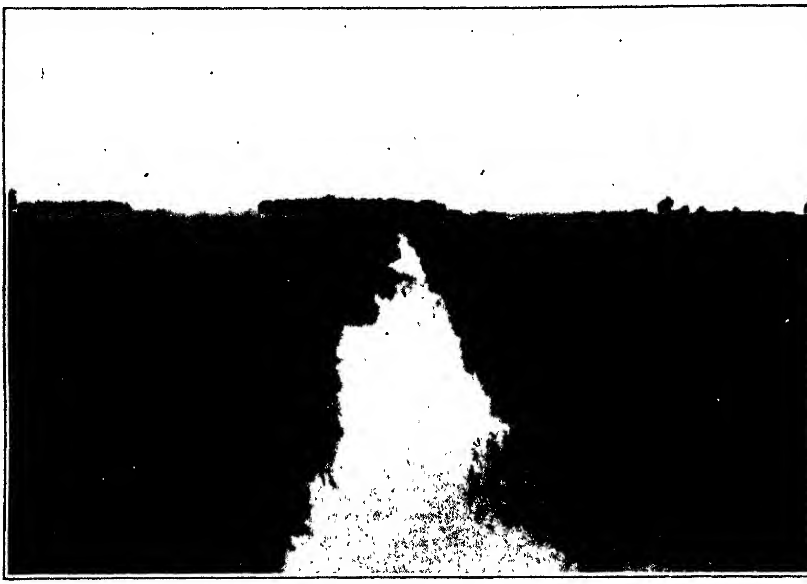

FIG. 71.—Lake Fork special ditch near Bement, Ill., before clearing, July, 1924

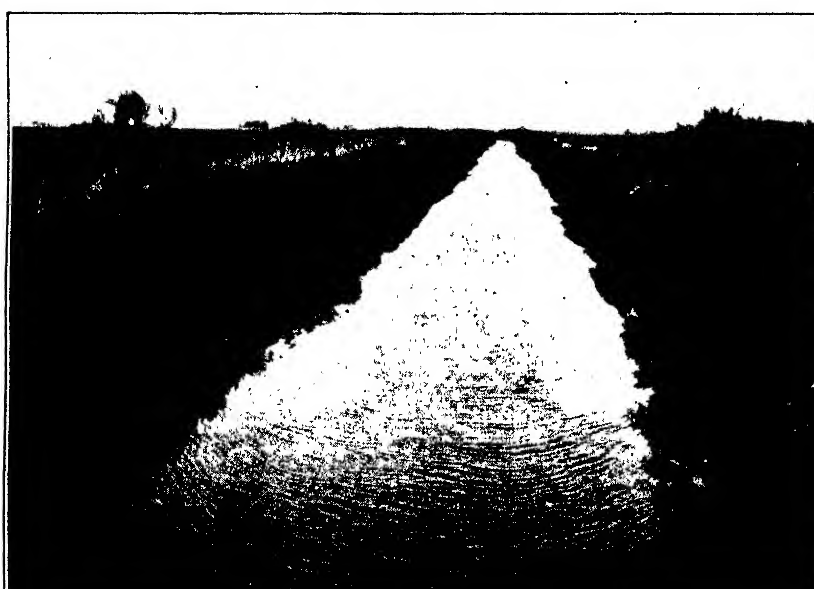

FIG. 72.—Lake Fork special ditch near Bement, Ill., after clearing, May, 1926

were in full leaf. The view in Figure 72 was taken during May, 1926, after the growth had been cut out. Measurements of the flow in this ditch were made before and after clearing and it was found

that the channel carried about 75 per cent more water after it was cleared. The cost of clearing out this channel was insignificant as compared with the losses sustained by the farmers owing to the tardy removal of the excess water after a rain. Since clearing the channel satisfactory drainage prevails.

The Kaskaskia mutual ditch near Bondville, Ill., has never been cleared since it was dug, as one might suppose, judging from the large size of the trees in the channel. A view of this ditch taken when the trees were in full leaf is shown in Figure 73. The thick foliage practically obstructs the view of the channel and the capacity of the ditch in this condition is only about one-third of what it would be if it were cleared out. Ditches of this sort afford extremely poor drainage. Not realizing the cause, landowners will often have such

FIG 73.—Kaskaskia mutual ditch near Bondville, Ill., July, 1924

ditches dredged larger at great expense when if the growth were simply removed at a comparatively small expense adequate drainage would be provided.

Willow Growth Reduces Ditch Capacity

Measurements of the flow in the Cummins Lake ditch near Gould, Ark., were made to determine what effect a comparatively short-time growth produces. It was found that the capacity of this ditch before the appearance of the willow growth was about 50 per cent greater than it was after they had grown a year or two, and twice as great as when the willows were in full leaf. These measurements apparently indicate that drainage ditches should be cleared out every year in order that they be maintained in a state of high efficiency. An examination of the bottom of this ditch showed that a certain amount of silting has taken place, which is due no doubt largely to

the presence of vegetation. It is a generally established fact that where vegetation remains in a ditch over a long period of years the cross section of the ditch is greatly reduced in size by the accumulation of silt, and it becomes necessary to redredge the ditch at great expense. This, of course, is especialy true where the ditch drains a somewhat rolling and hilly watershed.

Enlarging Ditches Often Unnecessary

The Cypress Creek drainage district near McGehee, Ark., has never been cleared since it was dredged. The trees in the channel are about 8 years old. Measurements of the flow in this channel were made when there was a heavy growth of foliage on the trees and it was impossible to see any appreciable distance along the channel. It was found that the capacity of this ditch is only about one-fourth of what it would be if it were cleared out, and that a clear ditch about one-third its size would have the same water-carrying capacity. The capacity of the ditch in its present condition is entirely too small to provide satisfactory drainage for the land in its watershed. Overflows generally occur after every heavy rain.

The results of the measurements described in the foregoing tend to show:

That the usefulness of a ditch is greatly impaired by the growth of vegetation.

That the clearing out of a long-neglected ditch will often provide satisfactory drainage and prevent injurious overflows.

That the costly mistake of enlarging a ditch is sometimes made when simply clearing the ditch would have produced the desired result.

That in most localities drainage ditches should be cleared out once a year if maintained in a state of high efficiency.

That the expense of clearing out a channel is in most cases much less than the crop losses suffered from one moderate overflow.

That vegetation in a ditch causes appreciable silting which often requires the redredging of the ditch at great expense as compared with the much smaller expense of systematic maintenance.

C. E. RAMSER.

DRAINING Marshlands Unwisely Marsh areas produce a greater income in many cases than do adjacent farmlands and also are indirectly valuable to the surrounding country. Through ignorance of this, there is much needless destruction of the homes of birds, fur animals, and other kinds of wild life amid such surroundings as conservationists seek to perpetuate. They do not, however, oppose the drainage of lands that will be less valuable as wild-life refuges than for agriculture or any other economic use.

The Department of Agriculture is in position to assist both the agriculturist and the conservationist in solving conflicting drainage problems. In recent years the Biological Survey has made many investigations for associations and individuals, and, as a result, a number of proposed drainage projects that were found to be unwise have been abandoned or the areas under consideration were, when suitable, made into wild-life refuges. The upper Mississippi River wild life and fish refuge furnishes an outstanding example of a marsh and water area which was recently seriously contemplated

for drainage, but which, after careful consideration, was preserved for its wild life. An investigation by the Biological Survey of this wonderful breeding ground more than 300 miles in extent, assisted materially in its perpetuation.

Study of Projects Urged

Careful study of proposed drainage projects is recommended by the Biological Survey with the view of preventing the unrestricted and indiscriminate destruction of marshlands and obtaining definite

FIG. 74.—Bird haven ruined by drainage. Lower Klamath Lake, Oreg., drained, but with mud 8 feet deep, which makes it useless for agriculture

FIG. 75.—Productive undrained marsh. More valuable for muskrat farming and as a breeding and feeding ground for ducks than for agriculture. Dorchester County, Md.

information as to their worth before drainage as compared with their possible utility afterward. When no effort is made in advance to determine the probable results of drainage, frequently the land uncovered is found useless for agriculture, and, in fact, only a small proportion is ever successfully cultivated. The files of the department contain particulars of the disastrous results following ill-considered drainage projects.

In addition to providing breeding, feeding, and resting places for thousands of birds, fur animals, and other forms of wild life, the principal value of marshlands may be briefly summarized as fol-

lows: They can add to the nation's food supply a great variety of fishes; they may produce a natural ice supply and grasses and other growths useful for forage and for making bedding, rugs, and baskets; in maintaining the underground water level they promote forest growth, insure the flow for springs and wells, and hold back the run-off of floods, thereby more evenly distributing the water over a longer period and preventing excessive erosion and other flood damage; furthermore, populated with interesting wild life, such areas can furnish millions of people with natural playgrounds, thus encouraging the beneficial study of nature and the greater enjoyment of outdoor life.

TALBOTT DENMEAD.

DROUGHT and Its Effects in United States On account of the widely diversified climate of the United States, the great variety of agricultural products, and the different requirements of these in the matter of moisture, the term drought, as applied to a lack of moisture in the soil for proper plant growth, embraces a multitude of conditions differing with each particular type of agriculture; hence no certain deficiency in precipitation can be defined as constituting a drought.

In the more eastern districts, where precipitation is usually well distributed and mainly sufficient for agricultural needs, a period of 30 days without beneficial precipitation constitutes a drought, and damage might be serious and even disastrous if the subsoil were not well supplied with moisture at the beginning of the drought period.

In our central valleys and Great Plains, where the bulk of the precipitation comes in the warmer months, drought during the early spring months will greatly diminish the wheat yield, and drought in midsummer will spell disaster to the corn crop.

Over the Pacific Coast States possible drought is confined mainly to the colder half of the year. Here precipitation may be decidedly scanty for a month or even a considerably longer period during the rainy season without serious inconvenience, but a generally dry winter season may be disastrous to nonirrigated crops through lack of sufficient soil moisture for crops that mature after the cessation of the winter rains.

A short period of drought in the eastern part of the country during the early spring months will frequently greatly curtail the hay crop, but it may not seriously injure wheat; in fact it may be beneficial in preventing excessive straw growth.

As to corn in its early growth, a period of drought may even be beneficial, forcing the roots to greater depths, a result which may prove beneficial later in the season if the surface soil becomes depleted of moisture.

Drought of short duration may be quite disastrous to corn when it follows a wet period immediately preceding the early formation of the ear, when abundant moisture is required, and if previous wet weather has caused the root system to develop near the surface the supply of moisture still available in the subsoil may not be reached in time to prevent loss.

Moderate drought is not always associated with scanty production. It may even prove beneficial to cotton by hindering activity of insect pests which do not multiply in dry weather. Further, the cotton plant remains somewhat dormant during drought, only to resume growth promptly when moisture is finally supplied, thereby at times enabling the development of a crop after the season of worst insect infestation.

Early droughts are particularly detrimental to most truck and small-fruit crops, as growth and development of these are usually rapid, and any material interruption is decidedly harmful.

Losses by Drought

Probably no part of the country is free from occasional heavy losses in agricultural products from deficient moisture, but improved methods of tillage and increase in the amount of vegetable matter in the soil tend to retain considerable moisture that would otherwise be evaporated or lost through seepage, thus affording a partial source of supply when rainfall is deficient. The amount of moisture conservable in this way is limited, and extended drought periods finally exhaust the whole supply and agricultural losses are in proportion to the time drought continues or to the actual possibilities of damage, this depending largely on the stage of crop development.

During the period of crop growth there is seldom a time when more or less drought does not exist in some portion of the country. In the Atlantic coast districts droughts more or less severe for a period of 30 days or more from March to September occur in nearly half the years, while in the lower Ohio and middle and lower Mississippi Valleys drought is liable during the same period in more than half the years. Over much of Texas and the western Great Plains drought is liable in 70 to 90 per cent of the years or even more.

This does not indicate that all crops necessarily suffer, as the drought may occur too late to injure winter wheat or too early to harm spring wheat; it may come before the corn is susceptible to severe injury or after it has largely matured, and it may happen during the various stages of cotton growth, when lack of moisture, though retarding growth, encourages fruiting and lessens insect depredations.

In portions of the eastern plains and upper Mississippi Valley, notably in much of Missouri and Iowa and portions of near-by States, on account of the preponderance of the yearly precipitation in the late spring and early summer months, the percentage of years with drought during the crop-growing season is the lowest in the entire country, being only from 30 to 40 per cent.

Dates of the Greatest Droughts

In 1901 lack of precipitation during the latter part of June and the greater part of July over the principal corn-producing States, associated with intense heat, threatened an almost total loss of the corn crop in some States. Fortunately, good rains near the end of July partly revived the crop, but the average yield of corn that year

for the entire country was reduced to 16.7 bushels per acre. *In Kansas the average yield* was 7.8 bushels per acre; *Arkansas had 8 bushels; Oklahoma and Missouri, 10*; Texas, 12; Nebraska, 14; and *in other near-by States yields were reduced to a less extent.*

*A severe drought, affecting corn particularly, centered over Kansas in 1913. Intense heat persisted for long periods, and condi*tions were worse than in 1901, reducing the average yield of corn in the State to slightly more than 3 bushels per acre, but in this instance drought was not so extensive in area as in 1901.

A notable drought occurred over the southeastern part of the country in 1925. Precipitation was greatly deficient during the entire growing season, most late crops were practically failures over the southern Appalachian region, and more or less loss was sustained in all near-by localities and over much of the eastern and central Cotton Belt as well.

With increasing hydroelectric development, drought losses are not so fully confined to agriculture as formerly. Now great interests are associated with water-power plants, and any lessening of the stream flow through drought is reflected in reduction of output and consequent loss.

With the development of large irrigation systems in the far West, the occurrence of drought in the winter months is of much greater concern than formerly. A deficiency in the winter's snow in the mountains now means a reduced flow of water into the irrigation ditches during the summer, and serious loss to crops depending on water from melting snow may result.

At present no basis for foretelling the occurrence of drought exists, but the damaging effects on crops of all kinds may be greatly ameliorated by recognizing the possibility of its occurrence and planning such a system of soil preparation and cultivation as will minimize its damaging effects.

Much information on soil preparation and types of cultivation most effective in conserving soil moisture is available in the publications of the Department of Agriculture.

P. C. Day.

EATING to Keep Body in Health

The idea of selecting food primarily to build and maintain a standard of health belongs to the present day. It is beginning to supplement materially in the popular mind the age-old idea of eating simply to appease the pangs of hunger and gratify the appetite. The causes that are contributing to the popular acceptance of this idea are the high cost of living, the growing scarcity of household labor, advances made in the science of human nutrition, and the many avenues afforded to-day for popular education along this and other lines.

The principles of eating for health have been outlined in a food-habits score card, which has proved to be one of the most effective devices for the modern teaching of food habits that make for health. This score card was first developed at conferences of the nutrition specialists of the cooperative extension service of the United States Department of Agriculture and the State agricultural colleges and

was later amplified and approved by the extension nutrition committee of the American Home Economics Association.

The score card is not intended to represent a complete diet, but rather to focus attention and interest on the food habits most in need of improvement. The nucleus of building, regulating, and protective foods which it specifies needs to be supplemented by moderate quantities of fats, sweets, and such other desirable foods as are necessary to keep the individual within the zone of normal weight for his age, height, and type of body build.

The score card itself is as follows:

Food-selection score card

[For the average person over 6 years of age]

Perfect score	Credits	
20	Milk:	
	Adults, ½ pint 10, ¾ pint 15, 1 pint	20
	Children, ¾ pint 10, 1 pint 15, ¾ to 1 quart	20
40	Vegetables and fruits	
	Vegetables—	
	1 serving 5, 2 servings 10, 3 servings	15
	Potatoes may be included as one of the above servings	
	If leafy vegetable is included, extra credit	5
	Fruits—	
	1 serving 10, 2 servings	15
	If raw fruit or vegetable or canned tomato is included, extra credit	5
15	Whole-grain products	
	1 serving 10, 2 servings	15
15	Cheese, eggs, meat, dried beans or peas:	
	1 serving of any one of above	10
	1 serving of any two of above	15
10	Water (total liquid).	
	Adults, 1½ quarts 5, 2 quarts	10
	Children, 1 quart 5, 1½ quarts	10
100	Total credits	
	DEDUCTIONS	
	Use of tea or coffee for children	10
	Use of over 2 cups of tea or coffee or both for adults	10
	Eating sweets between meals	10
	Total deductions	
	Total score	
	Weekly average (for daily checking type)	
	Average score for family (for estimate type)	

The size of the serving should vary according to the need of the person; for adults and older children an average serving of vegetables, fruits, or cereals is one-half cup. Servings will be smaller for children under 10 years.

The score card is now in general use in extension work as a part of the food-selection teaching. State nutrition specialists, county home demonstration agents, and trained local leaders have helped thousands of families to check their food habits against it. By checking also on such signs of physical fitness as freedom from constipation, colds, headaches, and indigestion, and proper weight for height and type, families have realized perhaps for the first time that a diet consistently low in any of the essential food groups results eventually in a poorly running body machine. This has led

to a gradual improvement of food habits which has been rewarded by corresponding improvement in physical condition.

The score card is an excellent guide to the diet of the expectant mother, when the milk is raised to 1 quart a day and correspondingly less is taken of other forms of protein, and for the nursing mother when the quantity of milk is increased to satisfy the demands of lactation. By the end of his first year the baby will be getting small quantities of all the groups of food included in the score card except dried legumes and possibly meat.

The attempt to live up to the food habits recommended in the score card immediately shows up any shortcomings in the farm or community food supply. The score card guides the farmer in the planning of the family garden and warns the housewife that she must can and store a goodly supply of fruits and vegetables for use during the winter or see to it that these are available, fresh or canned, in near-by markets. It calls attention to too small milk consumption and to the need for obtaining clean, safe, and palatable milk the year round for both drinking and cooking purposes. It shows the value of a supply of eggs, chickens, and meat, and the wisdom of canning, preserving, and storing these products throughout the year. In this respect it leads to good form as well as home management, for in days of descending price curves and disparity in prices between raw foodstuffs and manufactured products, the farm should produce as much as possible of the food for both the farm family and the livestock. Substantial cuts in bills for sickness and for medicines and substantial savings in cash outlay for essential foods that can be grown on the farm mark the trail of the food-selection score card as a guide to eating for health.

The adoption of a standard for food selection must be supplemented by the foods selected so that they tempt the appetite and at the same time keep the greatest food values. Good quality of protein, especially milk, plenty of roughage, succulent foods during the winter, leafy foods at all seasons, and an abundance of fresh, pure water are the essentials in eating for health.

MIRIAM BIRDSEYE.

EFFICIENCY of U. S. Agriculture is Increasing

Efficiency in agricultural production in the United States as measured by the physical volume of production per worker has shown a constant upward trend since data on production first became available. Production per agricultural worker was twice as great in 1919 as it was in 1879, 40 years earlier (fig. 76). In this period, output per worker in agriculture has been increasing at approximately the same rate as in manufacturing, but not so rapidly as in the transportation industry.

Production per worker is only an imperfect measure of efficiency. Many things other than labor are used in farming. From the standpoint of a particular line of production on the individual farm efficiency would be measured by the relation between the volume of product and all of the different inputs used. For example, in milk production several different kinds of food are used, as well as labor and equipment.

From the standpoint of the organization and operation of the entire farm as a business unit, efficiency may be defined as the ratio of the returns from the entire farm to the labor, land, capital, and other resources that are put into the business. If one is to obtain the greatest return from the resources he uses, i. e., if he is to be most efficient considering his entire operation as a unit, he must not only conduct each line of production efficiently, but must also choose and adjust his different lines of production so that they all have the right relation to each other.

Variations in Individual Efficiency

Many examples could be cited to show how efficiency in the different lines of production has increased; many examples of opportunities for further increases. All the farm-management and cost

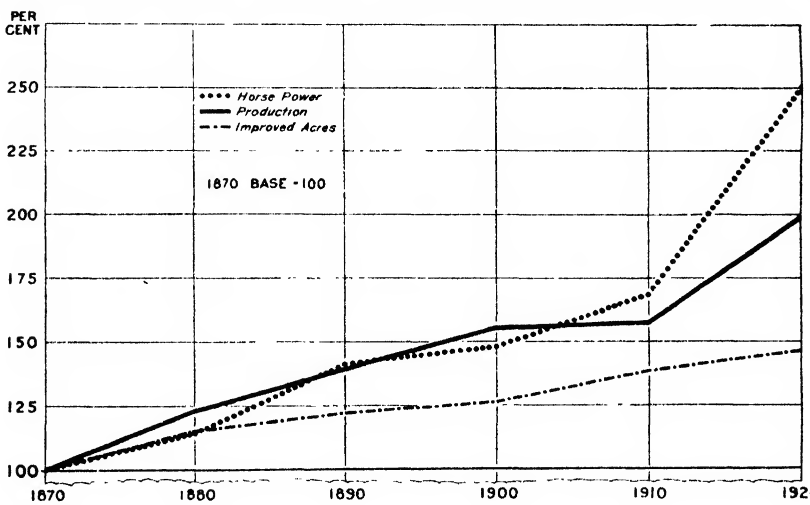

FIG. 76.—Indices of agricultural horsepower production, and improved acres per agricultural worker

studies that have been made show wide variations in the effectiveness with which the farmers in a particular locality at a particular time are carrying on their different lines of production. The results in cow-testing associations invariably show great variations in the efficiency of milk production. The various production contests sponsored by the extension services show similar variations. It is evident that there are abundant opportunities for farmers to attain higher standards of efficiency in their different lines of production than those now prevailing.

Evidence that many farmers are improving their efficiency by modifying the organization of their farms is found in practically every region. Even in old sections shifts toward larger units which give opportunity to increase gross returns without a corresponding increase in the outlay for labor and equipment are found. In every region, farmers are found who are introducing minor enterprises or giving more attention to them in order to round out the labor program and to utilize nonmarketable feeds and other resources which

otherwise have no value. For instance, throughout the Northeastern States an increasing number of farmers are growing a few acres of potatoes as a side line to dairy farming. In the South an increasing number are growing a few acres of truck crops as a side line to cotton production. In the Great Plains more farmers are keeping a few milk cows as a supplementary enterprise on grain farms.

Requisites for Continued Gain

If farmers continue to improve the organization of their farm businesses and to adopt better cultural and feeding practices, if plant and animal breeders continue to develop more productive varieties and strains, and if manufacturers continue to make new and better machines, continued increases in efficiency may be expected.

Turning now to the effect of increased efficiency on the returns from farming, what opportunities are there for farmers to increase their returns through greater efficiency? When considered from the standpoint of an individual farmer at a particular time and in a particular place, it is apparent that increased efficiency in carrying on the major lines of production will always be desirable. The grain grower who consistently obtains high yields by using good seed, by planting it at the right time, and by using good husbandry throughout, will, other things being equal, obtain a better income from his farm than will the man who is lacking in these respects. Similarly, the hog producer who manages to save a goodly portion of the pigs that are farrowed and who has adopted a good system of feeding, will, other things being equal, always make more money than the producer who has high losses and who is not a good feeder.

In considering the problem from the standpoint of farmers as a class, one must take into account the effect of increasing efficiency upon supply, and the effect of supply on price and returns. The farmer who increases his crop yields without a proportional increase in the use of labor, power, and materials, and he who increases the production of his livestock without a proportional increase in the quantity of feed usually increases the total output of his farm. A general increase in efficiency would thus tend to increase the total supply of farm products.

Effect on Volume of Production

As an example, let us examine the possible effect of a general increase in the efficiency of pork production on the incomes of pork producers. Records on more than 350 hog farms in Iowa, Illinois, and Indiana, covering the period from 1920 to 1926, show that over one-third of the pigs farrowed died before weaning time. Some of the farmers were able to avoid these losses almost entirely and it seems that through good management this loss can readily be reduced one-half. Assuming that the losses on these farms were typical of the losses on all hog farms, what would have been the effect on the number of hogs coming to market in 1926 and on the incomes of hog producers if half of these losses had been avoided?

If 85 pigs out of every 100 farrowed had been saved and sent to market, instead of the 67 which actually were saved, market receipts and slaughter would have been one-fourth greater than they actually were.

The usual relation between the price of hogs and the number slaughtered per month under Federal inspection is shown in Figure 77. The slaughter during the year was such that prices ranged from about $12 to $14, with the average for the year not far from $13. According to this chart, if slaughter had been 25 per cent larger than it actually was, prices would have been about 15 per cent lower, or only about $11. The total value of the hogs sold would, therefore, have been only slightly larger—about 6 per cent. The result would have been equivalent to selling those actually saved at $13, as before, and then selling the additional hogs at $3. And, of course, it would take 25 per cent more corn to feed the additional hogs—so they would be returning about 30 cents a bushel for the corn they received

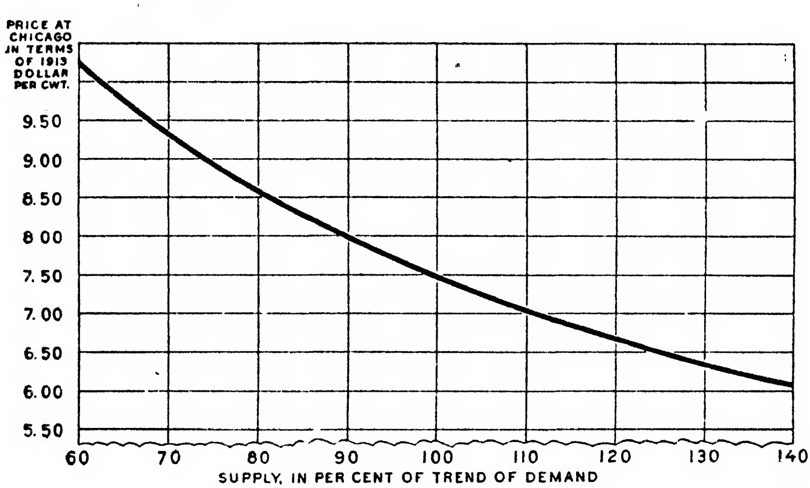

FIG. 77.—The price of hogs declines as the supply coming to market increases. When supplies are low, as they were in 1926, a given change in the supply causes a greater change in the price than is the case when supplies are plentiful

How Efficiency Can Be Made to Pay

Adding 25 per cent to the number of hogs would have increased the demand for corn, raising its price, as well as lowering the price of hogs; and the corn-hog ratio, instead of being highly favorable to hog producers, might have become even unfavorable. So the increase in efficiency by farmers who grow hogs to sell would finally result mainly in increasing the incomes of farmers who grow corn to sell.

But if hog producers should cut down the number of sows enough to offset the increase in pigs saved, they would receive the same price for their hogs, and reduce the expense of producing them. One-third of all expenses in producing hogs are incurred before the pigs are weaned, so the saving by cutting down the number of sows enough to offset the increase in pigs saved per sow would make a substantial reduction in the total expense of producing the hogs, without in any way reducing their selling price.

Many other examples could be given but they would all point toward the same conclusion: Increased efficiency can not have a favorable effect on the returns that farmers as a group will receive

if production is increased so much that the advantage is lost through a decline in prices.

It is generally accepted as a fact that at present the incomes of many farmers are not sufficient to afford a satisfactory standard of

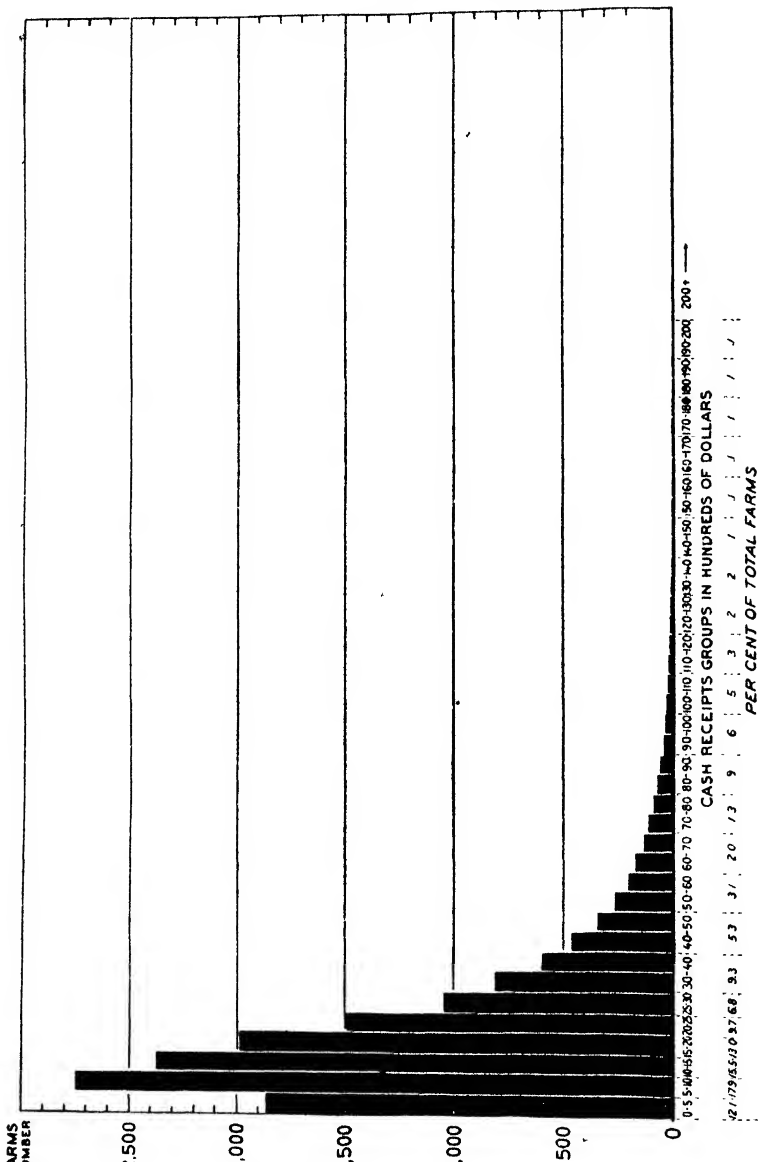

FIG. 78.—Variation in cash receipts of farmers in 1925. Number and percentage of farms with cash receipts of indicated size as reported by owner-operators in the farm-returns inquiry

living. A summarization of income statements for 1925 from over 15,000 farmers well distributed over the entire country showed that the "net result" (the difference between cash receipts and cash expenses plus or minus the change in the value of farm property other than real estate) for about 10 per cent of the farmers in the sample

was a minus quantity, for 45 per cent it was less than $1,000, and it was between $1,000 and $2,000 for 25 per cent.

Reducing Costs but not Increasing Output

A great many farmers could reduce their costs without increasing the output of their farms and thus increase their net incomes without increasing the total supply of farm products. But 30 per cent of the farmers reporting had gross receipts (without any deductions whatever for operating costs) of less than $1,000, and 28 per cent had gross receipts of $1,000 to $2,000. (Fig. 78.) If all of these

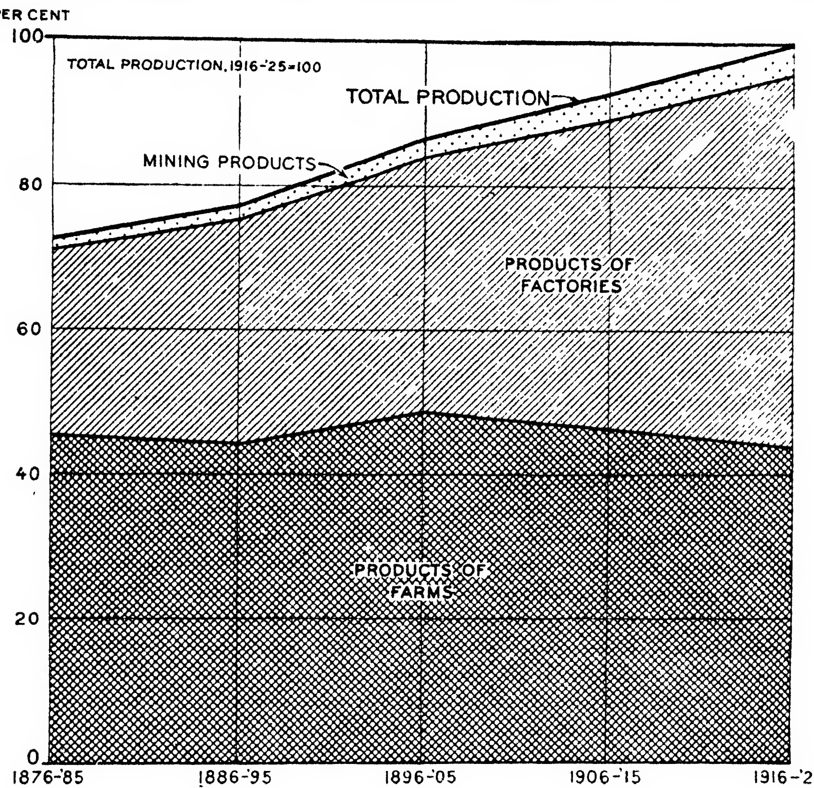

FIG. 79.— Changes in goods produced per capita of population, 1876–1885 to 1916–1925

farmers succeeded in lowering their costs to the absolute minimum a great many of them would still not have satisfactory net incomes. If they could all expand their operations to the point where their incomes would be satisfactory on the basis of present prices, the total supply of many commodities would be so large that, actually, prices would drop to a point that would be ruinously low for most producers. On the other hand, if a part of the farmers with small businesses moved into other occupations, those who remained could combine the land thus released with their own and increase their incomes without increasing the total volume of production.

It seems that unless many new and important outlets for farm products can be found, so that much larger quantities will be taken

without serious decline in prices, many of those now engaged in farming can not reasonably expect to obtain returns comparable to those available to them in alternative occupations.

The consumption of food products is definitely limited, however, and increased consumption of some products is offset by decreased consumption of others. The production of farm commodities per capita of total population in the United States is no greater now than it was 50 years ago. On the other hand, the per capita production of manufactured commodities has doubled, and per capita production of mining trebled. (Fig. 79.) A large part of the increased production in manufacturing has been in the form of new kinds of products satisfying new wants. In 1850, 65 per cent of the workers in the United States were employed in agriculture. By 1920, the proportion had declined to 26 per cent. Further decline is to be expected, and the movement of some farmers into alternative occupations should be encouraged. The unfortunate thing is that the need for fewer farmers, which grows out of increased output per man has never been clearly recognized until prices have dropped, making incomes from farming relatively lower than incomes in other occupations.

H. R. Tolley.

EGG Standardization is Put in Effect

The basic step in egg standardization, the establishment of standards of quality applicable to individual eggs, is an accomplished fact. After careful investigation and consultation with the various groups in the egg industry, the department separated the range of egg quality into seven divisions and formulated quality specifications for each, known as the United States standards of quality, by use of which it is possible to place definitely any individual egg in its proper quality division. These standards of quality were submitted to the egg industry for its approval, and at a meeting held in Chicago in January, 1925, under the auspices of the National Poultry, Butter, and Egg Association, were adopted as adequately differentiating and describing individual egg quality.

With the quality standards as a basis, the department next promulgated United States grades for eggs. At present these are still in tentative form, although their use under a rather wide range of conditions and over a considerable period of time indicates that they are practical grades. There are three distinct sets of United States grades, the make-up of each being varied in accordance with the point at which it is applied to eggs during the process of marketing. The first set is known as United States buying grades and is intended for use at primary country-buying points. The second set is known as United States wholesale grades and is intended for application to lots of eggs, car lots or less, in the wholesale trade, or from the time they are packed by the concentrator or shipper until they are sold to the jobber. The third set is intended for use in retail trade after the eggs have been finally prepared for consumer use. All these sets of grades, both in nomenclature and actual make-up, have been prepared with due respect to uniformity and to relationship to each other.

While these various sets of grades are still in tentative form, they are all in actual use. The buying grades are being used in a number of places in different parts of the country as a basis for grading eggs as they are purchased from producers and as a basis for a graduated scale of payment according to quality. In some instances these buying grades are not used in their entirety but in a form modified to meet the particular local conditions.

Grades in Extensive Use

The United States wholesale grades are in extensive use in certain markets as a basis of inspection. Egg-inspection services have been established at San Francisco and Petaluma, Calif., New York City, Philadelphia, and Sedalia and Medill, Mo. The work in California is carried on in cooperation with the State department of agriculture. At Petaluma the work is shipping-point inspection, while at San Francisco, both the United States wholesale grades and the Federal-State inspection service are official and required in connection with exchange trading in eggs. In Missouri the work is carried on in cooperation with the State marketing bureau and consists of shipping-point inspections. In New York City the work is entirely Federal in character but is mostly inspection for contract purchases and does not, therefore, deal so much with the United States wholesale grades. In Philadelphia the greater part of the work also consists of contract inspections which are entirely Federal, but, in addition, through a cooperative arrangement with the Philadelphia Produce Exchange, the Federal inspector is also the exchange inspector and makes any inspection required by the exchange on the basis of United States standards of quality, which are then translated into terms of exchange grades. Arrangements are pending with other agencies by means of which it is expected that there will be established in a considerable number of other important market and storage centers, inspection services using United States wholesale grades.

Various Government agencies, such as the Navy, are the principal users of the United States retail grades at the present time, all their contract purchases specifying certain of these grades. Some other agencies, such as public institutions and shipping lines, are also beginning to specify United States retail grades as embodying more definite quality requirements than the purchase specifications previously in use.

Egg standardization as a country-wide program still has far to go before it is a general practice. The first step, however, is an accomplished fact and the present status of egg standardization is characterized by rapid advance and constantly increasing application.

R. R. Slocum.

EGG Supplies in Winter Chickens do not ordinarily produce eggs during the fall and winter months unless they have been carefully raised and managed toward that end. It is not surprising, therefore, to find that our winter supply of fresh eggs must come from those sections of the country where large numbers of chickens are raised and managed for the primary purpose of producing eggs when most chickens are not laying.

The most highly specialized egg-producing sections of the country are located on the Atlantic and on the Pacific coasts, and the great majority of ordinary farm flocks are located in the grain and live-stock producing regions of the Middle West. In these latter regions the bulk of the Nation's egg supply is produced.

Even in the highly specialized egg-producing sections of the country there are large numbers of small flocks (fig. 80), but these are of small importance in the total annual egg production of the section, and especially in the winter production. In Cumberland County, N. J., in which Vineland is located, 72 per cent of the egg production comes from flocks having more than 450 chickens. This represents 15 per cent of all the chicken flocks in the county.

In Sonoma County, Calif., where Petaluma, the most intensive egg producing section in the world is located, 30 per cent of the flocks have more than 450 chickens and these flocks produce 91 per cent of all the eggs in the county. In the two Iowa counties, which are repre-

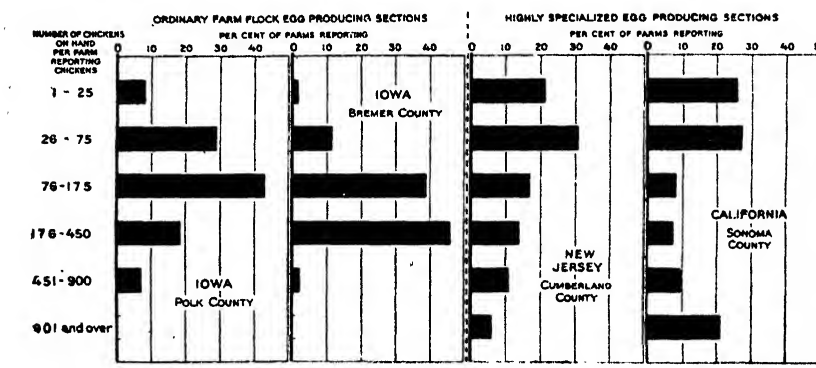

FIG. 80.—Number of farms reporting chicken flocks of various sizes in commercial and noncommercial poultry sections, January 1, 1925

sentative of ordinary farm flock conditions in the Middle West, less than 2 per cent of the flocks have over 450 chickens and less than 5 per cent of the total egg production comes from flocks of this size.

Specialized Egg Farms Get Winter Trade

States that have large numbers of commercial chicken flocks naturally send to market a much larger proportion of their total egg production during the fall and winter months. Iowa sends to the four leading markets about twelve times as many eggs during the spring month of highest production as it does during the winter month of lowest production; New Jersey four times as many, and California only twice as many.

Climate has much to do with the potential supply of winter fresh eggs. It is not likely that the middle West will ever specialize in winter egg production to the same extent as certain sections on the Atlantic and Pacific coasts where climatic conditions are more favorable to winter egg production. Petaluma, Calif., has an ideal climate for specialized egg production. The comparatively mild and open winters make it possible to provide green feed and to care

for the chickens with comparatively little effort, and it is not necessary to keep chickens confined to houses on account of inclement weather. The cooler summers are not only desirable from the standpoint of the comfort of the birds, but help to maintain high quality in market eggs.

We must look for our supply of fresh winter eggs principally from those sections of the country which have large numbers of specialized egg farms and where climatic and economic conditions are such that large-scale poultry farming is one of the most profitable enterprises in which farmers in the locality may engage.

E. R. JOHNSON.

ELECTROCULTURE Experiments Not Yet Conclusive Electrical phenomena are intimately associated with plant development. The nature of the relationship is not yet understood, but the possibility that electricity may be an essential factor in plant development constitutes the underlying reason for electrocultural research.

In some manner as yet unexplained the earth maintains a negative charge in relation to its upper atmosphere, so that in the intervening air an electrical tension of the order of 100 volts per meter is usually present. This lower air contains about 1,000 free ions per cubic centimeter, the greater portion of which carry positive charges and move earthward at the rate of about 1 centimeter a second, giving up their charges on contact. The current density occasioned by such a transfer of electrical charges is of the very low order of 5×10^{-8} amperes per acre.

Growing plants assume the earth potential and readily take these downflowing charges, so that under natural growth conditions a minute electrical current flows through them. The intensity of this current may vary greatly, particularly during storms, when the air locally may become negative and reverse the direction of current flow.

The earth itself, on the other hand, is traversed by minute electrical currents of varying intensity and direction. These currents are quite possibly adjustments to the unequal absorption of air charges occasioned by differences in soil conductivity, in which case they might be classed as secondary currents. It was at one time thought that soil-conducted currents might influence plant growth. but the experimental results have not been promising and this method has been discontinued for the most part.

Evidence is Negative

The majority of electrocultural experiments have sought to relate increased growth with the passage of an electric current through air and plants from an overhead system of wires discharging at high voltages. Such a set of experiments were conducted by the department (1907 to 1918), but no satisfactory evidence of a favorable influence for the treatment was obtained.[6] The British Ministry of Agriculture and Fisheries has recently been conducting similar ex-

[6] Reported in U. S. Dept. Agr. Bul. 1379, January, 1926

periments, and while their results as a whole have not given any definite proof of an increased plant development, certain trials indicated appreciable differences between treated and untreated plants. Because of these significant differences obtained in England the department in 1923 again began electrocultural investigations.

In the present series of trials apparatus is employed which permits of the passage of fairly constant and measurable currents of electricity from an overhead network to boxes of plants on insulated platforms below. A control series, similar in every way except for the treatment, is used for a comparison, and the average increases in growth under these conditions are used as measures of plant response to the different environments. This apparatus is shown in Figure 81.

Although significant differences have been obtained in a number of experiments, the variability of the controls has as yet prevented any satisfactory association of these differences with the current.

FIG. 81.—Methods used in electrocultural experiments. In the cage on the left a measured current of electricity was passed from the overhead network through the plants on the insulated supports below

It seems clear that at the present time no practical method of electrical stimulation has been developed.

L. H. FLINT.

EXHIBITS in Farm Education The next time you go to your State fair or to one of the big livestock shows, ask the man at the gate where you can find the Government exhibit. He will probably direct you to one of the main buildings. You can easily find the exhibit, because it will have a large sign over it, "United States Department of Agriculture." This is the department's traveling school of agriculture.

This particular school may include such subjects as farm management, livestock raising, better roads, forestry, and home economics. Again, it may be limited to a special course on one subject such as dairying, giving the latest information on methods of feeding, breeding, and management. Whatever the course happens to be

there is usually much to interest every visitor. This may be called a silent school of agriculture because the information is presented by means of educational exhibits. There will probably be from 10 to 20 of these exhibits, each one of which has a message so presented that it may be easily and quickly grasped.

The department is a storehouse of valuable information on agricultural subjects and new information is being added all the time. This information is valuable only when it is put into use. Millions of people attend the State fairs every year, a large proportion of whom are interested in farming. These offer a selected audience to which to present this information.

Many people learn more quickly and retain information longer when it is received through the eye than through any other means. One authority has stated that 80 per cent of retained knowledge is that which comes through the eye. Whether or not this figure is correct, the educational exhibit, presenting information visually, is very effective. It yields its message quickly so that he who runs may read, and it yields it without conscious effort on the part of those who receive it.

Reached 5,000,000 Persons

During the fiscal year ended June 30, 1926, the department showed exhibits at about 60 fairs and expositions with a total attendance estimated at 5,000,000 people. These fairs and expositions were widely distributed throughout the United States, and as many of them were held at the same time, it was necessary to make up 18 complete units of exhibits, each consisting of about a carload of material. It is a task to build these exhibits, start them on circuits on time, have them installed by the opening date, demonstrate them during fair week, answer many questions, and finally pack them in their crates, reship them to the next point of showing, and then repeat all this at the next fair. The men who travel with these circuits and the men who arrange the circuit movements are a busy lot.

One of the temporary Government buildings used by the Department of Agriculture in Washington houses a section of the Extension Service known as the office of exhibits. All through the year specialists in exhibit planning are building new exhibits and improving old ones. Designers are constantly searching for more interesting and effective ways of presenting information. Each year finds new diversions to take the attention of the State fair visitor and each year, therefore, the department's exhibit must be more attractive, more interesting, and more effective to gain and hold the attention of those it wishes to reach. Other workers are busy painting backgrounds, coloring bromide enlargements, lettering and making representations of various objects and scenes in wax, papier mâché, and other types of plastic material. To these folks, a thing isn't impossible simply because it hasn't been done that way before. This is the spirit that constantly works out new types of exhibits.

Spectators Are Critical

Because exhibits are examined critically by people in groups it is specially necessary that they be free from errors in statement or illustration. An error in a press article or bulletin is less likely to be

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noticed and ridiculed because only one person sees it at a time and there is no opportunity for mass discussion and expression of opinion. Not so with the exhibit. The slightest error is seized on by some one in the crowd who wishes to show his wisdom or his wit. Much of the comment, however, is offered in good faith. For example, at the National Dairy Show two or three years ago, different kinds of silage were shown in large glass jars fitted with wooden tops like silo roofs. A woman stepped up to the attendant in a perturbed manner and said, "Don't you think it's dangerous for the Government to advocate glass silos? They would break so easily!"

Made for Quick Setting Up

The department's exhibits are made as light in weight as possible and are so constructed that they may be easily and quickly set up and

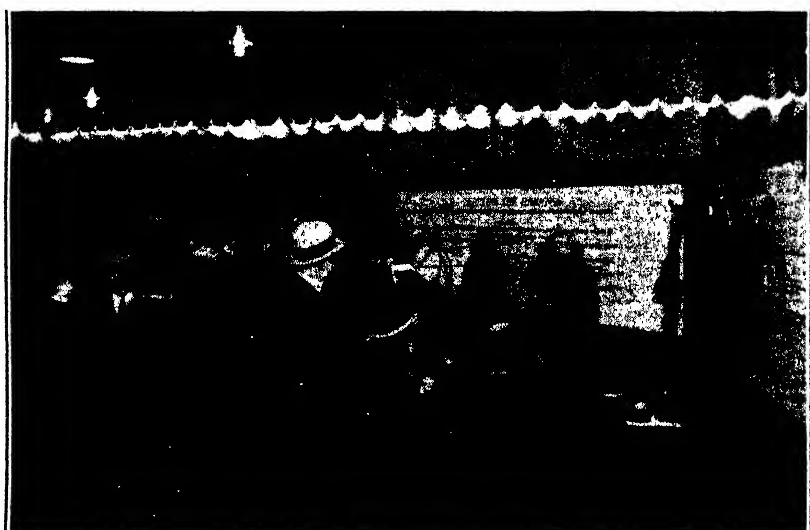

FIG. 82.—The average American is always on the lookout for new information. Information in exhibit form is "easy to take" and the crowds make the most of it

taken apart. The various pieces of the framework often hook together with bed hooks similar to those formerly used in wooden bedsteads. Where canvas or curtains are used they are equipped with snap fasteners. Every device which tends to shorten the time and labor of handling the exhibits is adopted. Crates are constructed so that the various parts of the exhibits can be placed in them quickly.

Where does the information or subject matter for all of these exhibits come from? The Department of Agriculture has a great number of facts it wishes to make available to those who need it. Each year the various bureaus of the department submit subjects which they believe are particularly important at that time and which they wish portrayed in exhibit form. Plans are then made to present the information clearly and effectively and in a manner so that it will first attract and then hold attention. When these matters

have been determined and the exhibit produced, the next question is to route it during the exhibit season where it can accomplish the most good.

The different sections of the United States have different methods and types of agriculture and naturally have different problems. An exhibit on how to trap and poison coyotes and wolves would not be of interest in any section except the West, where the problem of predatory animals is of great importance. An exhibit on the best ways to pack apples for market should be sent only where apples are grown commercially. Of course, some subjects are of general interest, and exhibits portraying information on these offer no difficulties to the men who arrange the routing.

Description of Material

The nature of a general course in the silent school of agriculture is best illustrated by a brief description of the material which actually made up the department exhibit on a fair circuit. This unit consisted of 12 exhibits, as follows:

Cooperative marketing.—A portrayal of the fundamental principles of successful cooperative marketing.

Farm woodlands.—How the farm woodland should be managed to supply fence posts, poles, and firewood, and yield a substantial profit each year.

Farm sanitation.—The value of sanitation on the livestock farm, proper types of buildings, yards, etc., and proper management.

Horses for power.—Types of horses and the uses for which they are best suited.

Milk for health.—How each member of the family may use dairy products in the diet as an aid to health.

Publications-information.—Showing the more popular Farmers' Bulletins and how bulletins may be obtained.

Selecting meats.—How to tell well-flavored, tender meat from meat of inferior quality, the different cuts of meat, their relative value and how to use each cut to advantage.

The neglected camp fire.—Urges caution in the forests with matches, cigarettes, camp fires, etc., as a means of preventing the 33,000 forest fires each year.

Tuberculosis of dairy cattle.—Shows the progress of the tuberculosis eradication campaign, how the disease attacks the cow and the desirability of getting rid of diseased cattle.

What cow testing revealed.—How one good cow, the average producer in a cow-testing association herd, produced more income above her feed cost than 91 cows in a herd on an adjoining farm.

When lightning strikes.—A flash and a roar attract visitors to this exhibit, which shows them the value of lightning rods to protect their farm buildings, and how to install the rods.

Contrasted with such general and diverse exhibits are those which deal with a single subject. At some of the fairs during the 1926 season a special show on dairying contained the following features:

Care of dairy bulls.
Dairy products for the family.
Dairy-herd management.
Dairy-farm organization.
Dairy-herd improvement.
Milk for children.
Sanitary milk house properly located.
Soy beans for the dairy farm.
Use of dairy products on farms.
Value of pasteurization.
Publications-information.

Associated with the department in making available these traveling schools of agriculture are the fair boards, colleges, and other State agencies. This cooperation makes wide distribution possible. Space for the exhibits is furnished by fairs without cost. They also pay for the transportation of the exhibits and supply labor for installation and maintenance. Each "school" has a corps of men who answer questions and give advice on agricultural problems to those desiring it. These advisers are drawn from the department, the State extension services, and other agencies.

Holding the Visitor's Attention

Light, color, motion, contrast, and sometimes noise are brought into play to attract attention. Once the visitor stops to look, his attention must be held by the effectiveness and attractiveness of the exhibit. Modern art, mechanical devices, and advertising psychology and methods are largely used to make these "silent schools" efficient carriers of agricultural information.

C. A. LINDSTROM.
H. T. BALDWIN.

EXPENDITURES of Farm Home Need Planning

How much should our food cost? What should we spend for clothes? Ought we to spend more on household equipment? What could we afford to do about books, recreation, membership dues to organizations, and other such expenditures?

Why bother ourselves with such questions? Most of us have no great surplus to expend. True, but we do have some choice, and if we remember that home makers as a group are directing the spending of many millions of dollars annually, we will each want to put our family finances on a business basis, for in this way we can both do our part in increasing national prosperity, and also improve our own manner of living.

Fortunately, the thoughtful home maker and her family can themselves work out a plan for expenditures better than can any outsider. How? The family must know five things: (1) What are its absolute necessities; (2) what, in addition, it most wants out of life; (3) the size of its money income; (4) how it now spends that income; and (5) what changes in expenditures would better provide its necessities and more nearly attain its other aims of life.

Planning the expenditure of the farm family is made unusually difficult by the fact that the cash income varies so much from year to year, and comes in at such irregular intervals. But this very situation makes it especially important that the family plan well ahead if it is to get the most for its money.

The first step is to figure out what total amount of money the family is fairly sure of receiving during the next 12 months, from the farm business and not to be put back into the farm, from earnings by work outside the farm, from interest on money in savings banks or invested in mortgages or elsewhere, and from rent coming in.

List Things Required

The next step is to list, in order of need and real usefulness, all the things the family will require or desire during the coming year,

beginning with the most absolute necessities and going on down to the things desirable but not essential.

What will have to be spent on food not provided by the farm? This can be estimated from previous weekly or monthly food purchases, if known; otherwise, from trial weekly or monthly accounts kept for the purpose. What will new clothes and repairs to old ones cost for each member of the family?

Fuel, light, telephone, laundry and other domestic services, soap, blueing, and other household supplies, must be considered. Will any of the furnishings have to be replaced? Visits to the dentist, doctor, and oculist, eyeglasses and medicine, are difficult to foretell, but the future cost of such health services can be estimated by looking back over past experience. Life insurance premiums are definitely known; income and other taxes may be estimated from the past year. Unless a separate farm account is kept, all taxes on the property, water costs, fire insurance, and interest on any mortgage on the farm and payments on the principal, would probably be cared for in the household record. Where an automobile is run, there will be expenditures for gasoline, oil, repairs and replacements, insurance, tax, license, and perhaps new equipment and a replacement fund to provide for a new machine.

Every family needs some recreation; is interested in helping to maintain some organization; wants to buy books, newspapers, music; has expenses in connection with the children's schooling. There are many small personal expenditures such as those for tobacco, candy, barber, and special toilet supplies. The simplest way to handle these latter is to give each member of the family an allowance to cover such items.

After all the necessities are cared for, the family may consider whether it will spend any surplus on new furniture, on equipment, on repairs and enlargement of the house, or increase its savings. The total list of planned expenditures should then be compared with the estimated income. In a well-planned budget the income will be a little larger than the total of all the estimated expenditures, so that any emergency which arises may be, in part at least, taken care of without cutting too deeply into the savings.

It will be found helpful to plan expenditures for each month and to write down what income will be received and what it is planned to spend on each class of items, as food, clothes, and so on during each month of the year.

A Record of Spending

In order to know how well the plan for expenditures is working, it is necessary to keep a record of the family's spending. A special account book is not necessary. An ordinary blank book will do very well. On one page could be written down all the food bought and its cost. There would be other pages upon which to record the clothing expenditures of each member of the family. All other expenditures could be written on another page; or, if it were thought desirable to keep separate any items, as savings and insurance, furniture and equipment, and so forth, a special page could be reserved for recording on each expenditures group. In most cases except that of food,

one page would be sufficient to record all the expenditures on one special class of items during the year.

At the end of each month a line would be drawn across each page and the amounts which have been spent on each class of items, as food, clothes for each member of the family, and so on, be added up. These totals for the month should then be written on a summary page so that one could see at a glance what had been spent on each class of items and what was the total expenditure for January, what for February, and so on for each month in the year.

This summary sheet should be compared with the sheet on which has been written the plan of expenditures for each month. By studying the two sheets, one could see where the plan for expenditures needed to be changed when planning for the next year, and also where one could do somewhat better in the actual spending.

CHASE G. WOODHOUSE.

EXPERIMENT Stations Promote Soil Betterment Efficient use of the soil is the basis of successful agriculture. Inquiries into the relations of the soil to the growth of crops have therefore formed an important part of work of the Department of Agriculture and of the agricultural experiment stations in the different States since they were first established. They now comprise approximately 10 per cent of the entire station work and cover almost every feature of soil improvement and use, including drainage and irrigation; correction of alkali, acidity, and other unfavorable conditions; use of fertilizers, green manures, and soil amendments; and crop and soil adaptions.

Much of the earlier work was very elementary, but later it began to go more deeply into correlations of cause and effect, explanations of the phenomena observed, and in furnishing a scientific basis for improved practices.

The series of systematic soil surveys inaugurated by the Bureau of Soils of the department and participated in by the experiment stations have served to increase the exact knowledge of the types, distribution, and general agricultural adaptations of the soils of the United States. The stations have added to the usefulness of these general surveys by supplementing them, especially with more detailed studies of the various soil types. This has made possible a more discriminating choice of soils, crops, and cropping systems and the more effective use of fertilizers and other methods of soil improvement.

It became evident early in the work that something must be done to stabilize the manufacture and sale, as well as the selection and use, of commercial fertilizers, since these were rapidly coming into use as means of improving the productive capacity of soils.

Results from Fertilizer Inspection and Experiments

To meet this need, fertilizer inspection and testing were inaugurated at many of the experiment stations. This resulted in considerable general improvement in the quality of commercial fertilizers and in their more intelligent and economical use. However, the need of more intimate studies of plant nutrition, of the conditions

and transformations of plant food in the soil, and of the best means of fitting the soil to the needs of crops soon became evident. Out of the study of such questions has grown a great volume of practical knowledge as to the best methods of soil management and use of fertilizers and other soil improvers.

Much has been done, for example, to show how the requirements of individual crops for nitrogen, the most needed and expensive plant-food constitutent, may be effectively and economically met, and how soils may be managed to maintain an adequate supply of this element by making better use of the cheaper natural supplies of nitrogen in stable manure and green manures. An important practical result has been the establishment of crop-rotation systems including green manures and cover crops, especially leguminous crops, which take nitrogen from the air through the medium of bacteria.

Similar investigations have been made with reference to potash, phosphoric acid, lime, and sulphur. These have yielded useful information on the requirements of crops for the different plant-food constituents, on the forms in which they are most readily utilized by crops, and on the total and available amounts of them in various soil types. They have also thrown light on the condition in which these materials exist in soils, which in turn has provided a basis for the development of rational soil-management practices to insure the conservation and most effective and economical use of the available supplies.

Unfavorable soil conditions, such as acidity, alkalinity, impermeability, and the like, are widespread and have received much attention by the stations. The work of the stations on soil acidity, for example, has had an important bearing on soil improvement. It has shown not only the nature and extent of acidity in soils but also the amount of acidity which different crops can endure and the factors which influence its adjustment and control.

As a result, the correction of soil acidity by liming is now fairly well understood and extensively practiced. Similarly the nature, cause, and manner of occurrence of alkali conditions in soils have been explained, and effective and economical methods of preventing or controlling the unfavorable conditions have been found. Much has also been learned as to the tolerance of individual crops for different alkali salts and combinations in soils, as well as methods of cropping and management which will overcome the injurious effects of excessive alkalinity. As a general result, profitable use is now being made of many soils which formerly were alkaline, water-logged, or impervious, and therefore worthless for agricultural purposes.

Basis for Improved Tillage

Studies of the physical properties of soils have provided the basis for improved methods of tillage and moisture control and of liming and manuring. Methods have thus been developed for maintaining soils in the friable, well-aerated condition required by crops, and a basis has been laid for the improvement of tillage operations and machinery.

Much has been done to determine the moisture requirements of different crop plants and, with this as a basis, to determine the movement, distribution, and conservation of moisture in soils of

different kinds and the ability of the soils to make water available to crops. As a result, methods of tillage, manuring, cropping, drainage, and irrigation have been developed which aid in maintaining the optimum moisture conditions for growing crops on different types of soils. It has also been made possible, largely as a result of such work, to do much in the way of adapting crops to prevailing conditions of precipitation and soil and thus make most efficient use of the available moisture supply.

Two other lines of scientific endeavor which promise to aid eventually in the improvement of soils are the studies of colloids and replaceable bases. It has been shown that colloids exist in considerable amounts in soils and have a marked influence on those physical and chemical properties which largely govern soil productivity. The work with replaceable bases promises to provide a more reliable basis than is now available for the adjustment of soil reaction to the needs of different crops.

The above are some examples of ways in which the experiment stations have been able to contribute to the improvement of agricultural soils. Many other examples might be cited showing the wide range of soil problems to which the stations have given attention. The broad scope of these activities and the closeness of contact of the stations with local or regional soil problems undoubtedly accounts for a large measure of their usefulness in solving problems of soil improvement.

R. W. TRULLINGER.

EXPERIMENT Station Work on Animal Disease Control

Animal diseases exact a heavy toll of the farmer and at times result in enormous and overwhelming losses. Naturally the subject of their control demands and receives much attention from those concerned in maintaining efficient and profitable production and safeguarding the food supply and the public health.

Of the approximately 6,500 projects of investigation of the agricultural experiment stations, 216 deal with animal diseases and their control. This work of the stations supplements and in many cases is closely associated with that of the department. The combined efforts of these and other agencies have made possible a high degree of protection of the health of man and beast and advancement of the livestock industry of the country. Certain destructive diseases, such as contagious pleuropneumonia, have been actually eradicated; others, like Texas fever and tuberculosis are in the process of eradication; and with many others, as, for example, hog cholera and bacillary white diarrhea of chicks, a high degree of control has been attained.

The list of diseases to which the stations have given attention is a long one, including most of the important diseases which seriously affect livestock.

Tuberculosis of cattle was one of the first diseases investigated. This disease has been studied from many angles and the knowledge thus gained has paved the way for the campaign of eradication now being successfully conducted throughout the country. A marked recent increase of tuberculosis in swine noted in certain regions has been attributed by the Nebraska station in large part to infection

from tuberculous fowls. The avian form is apparently not so virulent in swine as that transmitted from cattle, and its diagnosis appears to be somewhat more difficult.

Means of Disease Control

The Nebraska station finds that tuberculin of mammalian origin often fails to detect avian tuberculosis, and vice versa. The station, therefore, recommends that both avian and mammalian tuberculin be used in diagnosis. The station recommends as the best means of controlling the disease the selection of safe quarters and feed, the rejection of diseased carcasses as food for swine, and, above all, the practice of hog-lot sanitation such as is now generally advocated for the prevention of filth-borne pig diseases. The Minnesota station found that less than 1 per cent of the eggs from tuberculous fowls actually contained living tubercle bacilli. No tubercle bacilli were found in or on the eggshell.

Investigations of Texas fever were also undertaken at an early date, but little progress was made until the causative organism was discovered and its transmission by the cattle tick, demonstrated by Theobald Smith and F. L. Kilborne of the department in 1889, and methods of dipping infested cattle and of immunization were successfully worked out. This has made it possible to introduce improved breeding stock and thus build up the beef and dairy industry of the South. The stations have assisted in furthering the tick eradication campaign, which has resulted in the release from quarantine of large areas of formerly tick-infested country.

Hog cholera has been one of the most destructive diseases with which the American farmer has had to deal, particularly in those regions where hogs are raised in large numbers. Following the discovery by Marion Dorset of the department that the disease is caused by a filterable virus and the perfection of the serum method of treatment, the stations have taken an active part with the department in the application of such knowledge in prevention of the disease and in assuring a sufficient supply of dependable serum for the purpose.

Infectious Abortion a Menace

Infectious abortion has become a serious menace to the livestock industry, especially to the business of the breeder of cattle, horses, and swine. The loss of young and the sterility which may follow has led to investigation by a number of the experiment stations of the means of transmission, diagnosis, possibility of immunization, and control measures. Elimination of the disease by isolation of reactors appears to be a possible practical solution of the problem. The Washington experiment station found it possible to control abortion in a Holstein herd, 65 per cent of which was infected, by dividing the herd into two groups on the basis of the agglutination reaction and keeping the two groups separated when they were at liberty. This necessitated having separate pastures in the summer and two open sheds in the winter. All of the cows were milked at the same barn by the same attendants. The negative cows were brought in first and stanchioned, after which the positive cows were brought in. After milking, the positive group was turned loose first. The cows were brought into the barn for the purpose of milking only and while

there were fed their grain. No hay was handled, stored, or fed in the milking barn. After milking, the manure was removed and the floors washed and scrubbed.

A striking illustration of the practical value of the scientific work of the stations on animal diseases is the result of investigations on bacillary white diarrhea of chickens in which a number of the stations, notably those of Connecticut and Massachusetts, have engaged. This disease spread so rapidly as to threaten the day-old chick business. The losses were so large that many hesitated to buy baby chicks under any circumstances. Investigation led to the discovery that the organism causing the disease passes from the ovary of the infected hen through the egg to the chick. This discovery was followed by the adaptation of the blood test to the detection of the infected hen, thus making it possible to eliminate the carrier fowls from the flock in much the same way that the tuberculous cow is detected by means of tuberculin and removed from the herd. This furnishes a means of eradicating the disease and makes practicable the accreditation of disease-free flocks.

W. A. Hooker.

Experiment Station Results in Food Crop Improvement Production of the highest yields of high-quality products appears essential to the financial success of the farmer. The pioneer efforts in experimentation with crops aimed toward increased acre production and the cultivation of greater areas. The recent excess production of certain crops, with consequent reduction in profits, has given impetus to development or search for better crops or those possessing particular outstanding qualities. The plant-breeding sections of the agricultural colleges and experiment stations have been constantly engaged in endeavors to develop better varieties of cereals, root crops, and vegetables, and to make them available to the farmers.

The numerous varieties obtained either as the results of definite attempts or as by-products of investigations have been variously characterized by their earliness, disease resistance, adaptation to specific environmental conditions, commercial value, or culinary qualities. Enhanced protein content of wheat, variation in the oil or protein content of corn and soy beans, better brewing quality in barley, increased sugar content of sugar beets, improvement of quality and length of fiber in the fiber crops, better seed quality of potatoes, and improved quality in tobacco have resulted from the extensive efforts of the plant breeders.

Food grains have naturally received first attention in view of their prime importance in the home, on the farm, in manufactures, and in commerce. The principal aim in wheat improvement has been the production of high-yielding varieties, but milling and baking quality and resistance to drought and disease are important considerations.

New Varieties of Wheat

Among the noteworthy varieties of wheat is Kanred, a pure-line selection from Crimea (Turkey) contributed by the Kansas experiment station, which has proved more resistant to rust, somewhat

more winter hardy, and slightly earlier than the more commonly grown Turkey and is now grown extensively. Denton, a pure-line selected from Mediterranean wheat by the Texas station, is rust resistant and outstanding in yield and has a wide distribution in the wheat-growing region of northern Texas. Fulhio wheat, developed by the Ohio station as a pure-line selection from Fultz, has exhibited high yields, good tillering capacity, winter hardiness, fairly stiff straw, and a somewhat greater resistance to loose smut than Fultz. Redrock, an awned, soft, red, winter type selected by the Michigan station, is suitable to well-drained, fertile loams and heavy soils and is of excellent milling quality. Inbred, developed from Banat wheat by the Iowa station and the United States Department of Agriculture, has given excellent results, showing winter hardiness, excellent quality, stiffness of straw, and a good yield. Michikoff, developed from a hybrid by the Indiana station, is known for its winter hardiness and a hard, glutinous kernel of high-test weight, producing flour of superior quality for bread.

Marquillo, a new awnless wheat originated at the Minnesota station by crossing Marquis and the rust-resistant durum Iumillo, has a stiff straw, matures somewhat earlier, yields slightly better than Marquis, and compares favorably with Marquis in baking quality. Mindum, a bearded, white-kerneled durum wheat selected by the Minnesota station, has fair rust resistance, yields high under Minnesota conditions, and is of good quality for macaroni and other durum-wheat products. Minturki, a bearded, white-chaffed winter wheat with kernels of the Turkey type, resulted from attempts by the Minnesota station to produce a hardy winter wheat with other desirable qualities. Mosida, developed by the Idaho station, has given high yields, has a better than average resistance to bunt, good strength of straw, and is adapted to the cut-over sections of northern Idaho. Ridit wheat, developed by the Washington station from a hybrid, is an awnletted hard winter wheat and has resistance to bunt and to shattering and superior milling qualities as outstanding characters.

Corn Investigations

Investigations with corn have been so extensive and diverse that only significant current trends may be discussed. Practically every station has compared local and introduced varieties and has endeavored to produce better strains by selection, hybridization, or other breeding methods. The wide variation according to the type or variety of corn and also within the variety renders it possible to select for ear or plant characters, e. g., the high and low protein and the high and low oil strains produced by the Illinois station and the cold-resistant strain by the Wisconsin station, as well as the characteristic kernels and other features of certain types. The widespread use of improved varieties such as Leaming, Reid Yellow Dent, and Boone County White has greatly increased the value of the corn crop.

Considering that corn is highly cross pollinated, that the grower naturally tends to select certain of the several types in the variety, and that the several types may react differently to the environment, it is not surprising that the improved variety may be decidedly modified in relatively short periods. Systems of breeding depending

on mass selection, i. e., ear-to-row or score card, generally have not been found advantageous, since these are based on ear or plant type and consider only the female parent.

The method of breeding known as selection in self-fertilized lines recently in vogue at many of the experiment stations controls the male parent by self-pollination. Inbred lines so derived are differently characterized by their vigor, weakness, tendency to lodging, and resistance to diseases. Chlorophyll variations, dwarfing, and other aberrant tendencies may appear during the several years of selfing and can be eliminated. The most vigorous and promising of such inbred strains may be combined in single, double, and multiple crosses, even to the extent of producing "synthetic" or "re-created" varieties. Current results suggest that the standard corn varieties may be decidedly improved by this means.

New Strains of Oats Profitable

Oats, a cereal ranking high in acreage and crop value and very important in American agriculture, has also received considerable attention from plant breeders. The claim has been made that the improved oats varieties developed and distributed by the Iowa station return to the State each year more than the total annual appropriation made by the State for the support of the State college and the experiment station combined. A survey indicated that over 46 per cent of the total oats acreage of Iowa in 1924 was planted to Albion, Richland, Iowar, and Iogren oats, varieties developed cooperatively by the Iowa station and this department. The total production gained by growing station varieties that year was about 11,000,000 bushels.

Gopher, an early maturing oats with white grain, selected by the Minnesota station, is characterized by a stiff straw, high yielding ability, and heavy weight per bushel. Kanota oats, distributed by the Kansas station, excels the commonly grown Red Rustproof (Red Texas) in yield, test weight, and earliness, and can endure heavy spring frosts better than Red Rustproof. The New York (Cornell) station cooperating with this department has brought forth six pure-line selections of oats—Cornellian, Ithacan, Comewell, Empire, Standwell, and Upright. Wolverine, a very productive oats for the lighter loams and upland soils, and Worthy, a stiff-strawed variety adapted to very heavy soils, resulted from breeding work by the Michigan station. The superior characters of Markton oats, developed by the Oregon station and this department, include early maturity, high yield, immunity from covered smut, thin hull, and excellent milling quality. Tech oats, originated by the Virginia station, combines high yield, early maturity, and winter resistance. The Wisconsin station has produced several high-yielding oats, including State Pride, characterized by earliness and adaptation to fertile soil; White Cross, identified by earliness, tall straw, and adaptation to light soil; Forward, having plump kernels and relative freedom from rust; and Wisconsin Wonder, known for its stiff straw.

Other Cereals

Among the cereals used to a lesser extent for food may be mentioned Tennessee Winter a six-rowed awned hulled barley developed by

the Tennessee station, and Colsess, a six-rowed hulled barley derived by the Colorado station, which stands up under irrigation, does not shatter much, is early, high yielding, and adapted to mountain agriculture. Michigan Black Barbless is a short, stiff-strawed, smooth-awned barley brought forward by the Michigan station and indicated for heavy fertile soils. Minsturdi, a six-rowed barley produced by the Minnesota station cooperating with this department, has a stiff straw, yields well, and is particularly adapted to rich or heavy soils where other varieties often lodge badly. In similar cooperation, resistance to spot blotch and the smooth-awned character were combined in Velvet, a six-rowed high yielding barley. This department cooperating with the Idaho station developed Trebi, a six-rowed awned, stiff-strawed barley for irrigated land, and with the New York (Cornell) station produced Alpha, a two-rowed hybrid yielding well in New York.

Grain sorghums improved by the Texas station include Spur feterita, a variety apparently well suited for growing under irrigation and surpassing the original feterita for both grain and forage; Dwarf feterita, selected from common feterita, being very early and drought resistant and valuable for extreme western Texas where rainfall averages below 20 inches; and high-yielding strains of Blackhull kafir. Resulting from crosses between kafir and feterita in cooperation with this department, Primo excels the common sorghums in both grain and forage qualities, and Chiltex, considerably earlier than Primo, is better adapted to the dry regions of western Texas.

Several new varieties of rice, Fortuna, Acadia, Delitus, Tokalon, Evangeline, Vintula, and Salvo, characterized by their agronomic and culinary qualities, were developed cooperatively by the Louisiana station and this department. Texas Fortuna rice, developed by the Texas station, resembles the Fortuna selected in Louisiana.

Vegetable Breeding

Vegetables make up a considerable and important portion of the diet of the family, and, naturally, have been the subject of extensive breeding work at the experiment stations. The Robust white navy bean, a vigorous, disease-resistant, and productive variety has been selected by the Michigan station. Iowa 5 cabbage, developed at the Iowa station, proved resistant to yellows and growers reported it a very good type. Several types of cabbage resistant to yellows have been developed by the Wisconsin station cooperating with this department. Penn State Ballhead, a late cabbage notable for uniformity in size, shape, and weight, and high yields, was brought forth by the Pennsylvania station. Sunshine sweet corn, a yellow sort considerably earlier and with much larger ears than Golden Bantam, resulted from breeding work at the North Dakota station. A high quality and evenly maturing type of Country Gentleman sweet corn, developed at the Indiana station, outyielded its nearest competitor by from one-half to three-fourths ton per acre. Selection in self-fertilized lines has given rise to superior sweet corn at the Maine station.

The Everbearing pea, developed by the Idaho station, is a good market garden pea, combining high yield with exceptional flavor.

The V. P. I. Green Mountain potato, a hill selection outyielding the ordinary Green Mountain, has excellent cooking qualities and is in great demand and widely grown in western Virginia. Kitchenette Hubbard, a small Hubbard squash developed at the Minnesota station, averages about 5 pounds per squash but yields as heavy a tonnage as any of the Hubbards and is considered the ideal squash for the family. The Virginia Truck station originated a variety of spinach, Virginia Savoy, resistant to the mosaic disease and possessing good quality. The Red River tomato, an extra early red variety which is rounder, smoother, and more solid than Earliana, and the Agassiz, a medium early purple tomato of good size and heavy yielding ability, were developed at the North Dakota station. Tomato strains selected at the Missouri station for resistance to wilt (*Fusarium lycopersici*) gave acre yields as much as 8 tons in excess of those by nonresistant commercial sorts.

Examples like the above, showing how the experiment stations have contributed to the improvement in yield and quality of food crops and thereby increased the potential food producing capacity of the country, might readily be multiplied.

HENRY M. STEECE.

EXTENSION Education Making Great Progress in U. S. A new leaven is at work in country life. The farmers, the agricultural colleges, and the United States Department of Agriculture are cooperating in a great teaching program that has for its object a more efficient and profitable agriculture, an adequate supply of food and clothing for the Nation, and a larger social, recreational, and educational rural life.

There are directly engaged in the new work about 5,000 Federal and State employees giving full time to the work, 200,000 volunteer farm men and farm women acting as chairmen of committees or sponsors of local improvement work, and about 1,500,000 farm and home demonstrators. The Federal Government is spending about $7,000,000 annually in support of the work, and the States and counties about $12,000,000 more, making a total of around $19,000,000.

As a part of this work, 565,000 rural boys and girls 10 to 18 years of age have been organized into 45,000 clubs for the purpose of learning better agricultural and home economics practices, how to do things, acquire property, develop character, and achieve. In all, about 3,000,000 farms and homes are changing some practice for the better annually as a result of this work with juniors and adults.

The partnership of Government and people in a rural teaching program is something new. The agricultural colleges, through their experiment stations, and the Federal Government, through its Department of Agriculture, have a research force of more than 5,000 trained men and women giving their whole time to finding out new things in agriculture and home economics. They are constantly discovering matters of fundamental importance to agriculture and significance to farmers.

Farmers Who Are Experimenters

Then there are farmers in every community who are essentially experimenters. They have tried out new crops, new ways of doing

things, have managed differently and have made a success where many others have failed. They know local conditions; what is likely to succeed and what is not.

When, therefore, the agents of the agricultural colleges and the Department of Agriculture, with their technical background of research, and the farmers with their knowledge of local conditions and background of experience in any community form a partnership, as they have in over 45,000 rural communities of the United States, for the purpose of improving the economic, educational, and social conditions in those communities, progress in those communities is inevitable.

In this new teaching work agents of the Government and the farmers and farm women, sitting around a common council table,

FIG. 83.—Developing a community program for extension work with the county extension agents

first go over together the facts of the community—what crops and stock they are growing, the yields and products they are getting, cost of production, facilities for marketing, profits and losses, hindrances to success, and like matters, and together agree upon a plan of betterment. (Fig. 83.)

They determine whether they will employ a technically trained counselor to be stationed permanently in the county to aid them in their work, whether such counselor will be a man or woman county agent or home demonstration agent, who he or she shall be, what wages shall be paid, what program shall be put on the first year, what demonstrations made, what farmers will make them, what assistance shall be given the farmer demonstrators by the county agent or home demonstration agent, what field meetings shall be held,

what exhibits and reports made by the demonstrators, what short courses they want held, what instruction given, and like matters. When people begin to think systematically and critically about their business, they take the first great forward step in progress.

Learning by Doing

The essential characteristic of extension education is learning by doing. When a farmer in eastern United States puts on a demonstration in alfalfa, for example, with the cooperation of the extension agents, he learns through his own experience the value of lime, the need of inoculation with the proper bacteria, and the necessity of using native northern-grown seed.

When a field meeting is held on the demonstration plot and the farmer explains to his neighbors what he has done, how he did it, and the results he is getting, he grows mentally. When that winter he reports to the farmers' institute or other farmers' organization his yields, costs, profits, and the results he is getting in feeding the new legume to his cows, he makes further progress; and when the next season he acts as a teacher in showing his neighbors how to grow and feed alfalfa on their own farms, he becomes a real teacher and man of importance in the neighborhood.

Extension work brings farmers and farm women together increasingly in groups for the consideration of matters involving group action. Thus, in shipping livestock, pooling of the stock of a number of farms is often necessary if the advantages of carload-lot freight rates are to be obtained or if feed is to be bought at wholesale prices. The farmers learn the benefits of cooperation. They reach the decision as to whether or not they will form a shipping association, elect their officers, tag the stock shipped, decide on the market they will ship to, get back the returns, and make the distribution of proceeds. This is all an educational work, and men and communities develop in the process.

Extension is doing much for farm women; through it farm women are increasingly getting out of the home and meeting together in clubs. They are studying the principles of nutrition, how to blend colors to match form and complexion, make hats, test fabrics, use patterns, and dress becomingly, how to earn money, plan the year's budget, and organize their labor. Moreover, they are learning parliamentary practice, how to play together, entertain, train children, care for the health, and like matters.

Training of Boys and Girls

Probably the most significant phase of extension education is the training that is being given rural youth in the boys' and girls' club work.

In this work, boys and girls 10 to 18 years of age are taught the best way to grow corn, feed and care for poultry, can fruits, meats, and vegetables, bring up a litter of pigs, and such things. The young folks usually are organized into clubs of 10 to 15 members each. Each member must do a piece of farm or home work and put it on in such a way that it will be a demonstration of better ways in the neighborhood.

The club members make exhibits of what they grow, are taught how to judge quality and value. They are taught how to earn money, acquire property, the value of thrift, while in the process they are taught how to sing together, play together, put on a team demonstration. It is something done voluntarily. It is not out of books but out of life. They like it. They are learning efficiency and cooperation and sociability in their youth and the records show that the things taught boys and girls in their youth are carrying over into their adult life. This is probably the most important phase of present-day agricultural extension education.

The agricultural extension work is a National, State, and county government service, available to all and within the reach of all rural people. No one can come in contact with it and take part in it with-

FIG. 84.—A girls' club member in her demonstration garden

out growing in efficiency, enlarging his outlook, becoming a better neighbor and citizen. It is a service for the whole family. How it may be brought into any rural community anywhere can be learned by addressing the extension service of any State agricultural college or the Extension Service, United States Department of Agriculture, Washington, D. C.

C. B. SMITH.

FARM Accounts an Aid to Efficient Planning of Work Many farmers in the past have kept some form of accounts but only a small percentage have kept them in the most useful form. Some keep an account of their receipts, others keep only the cash outlay, and still others keep only inventories. In any case the procedure in account keeping has not been sufficiently systematic to inspire the farmer with the value of

his accounts or to enable him to make important practical use of them.

One reason why progress has been slow is that practical farm bookkeeping methods have had to be developed mainly by the trial-and-error route. Attempts to transfer the accounting systems of the industrial field to farming have not worked. They involved too many transactions and too much time for bookkeeping. To meet this deficiency, a practical type of farm accounting was developed by the cooperative extension service of the State agricultural colleges and the United States Department of Agriculture through the assistance and cooperation of practical farmers.

This type of farm accounting recognizes the principles of standard accounting, and lends itself to such modification in form from year

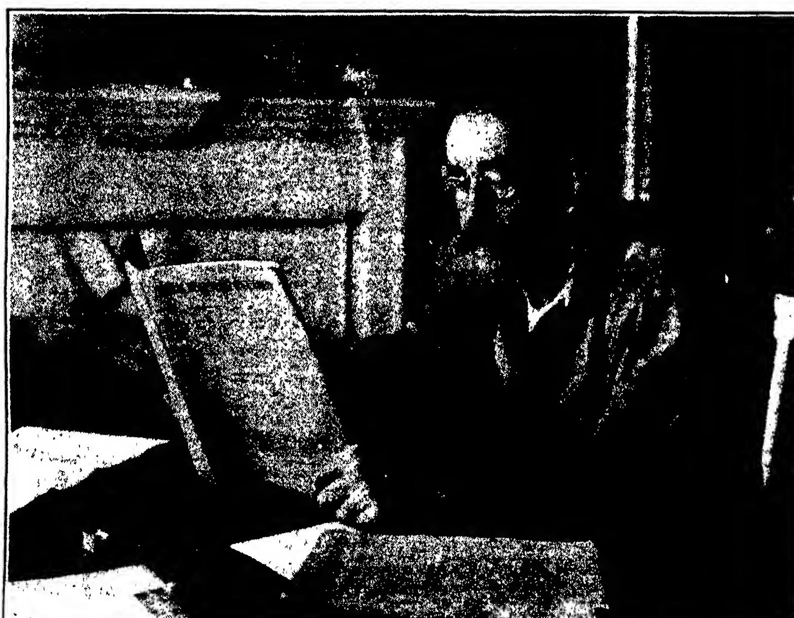

FIG. 85.—Farmers find properly kept accounts most helpful in planning the management and operations of the farm

to year as the needs of farmers using it demand. The Extension Service has been working on this problem of farm accounting with groups of farmers in over 30 States and in each State practically the same basis for the keeping of farm accounts has been adopted.

Extension Service Assists

More than 90,000 farmers procured copies of these simple farm account books for use in 1925. Although it is not possible to follow up all farmers receiving books and assist them with their accounts, 10,000 farmers were assisted by the county agents throughout the United States in 1925 in keeping and analyzing these accounts. The results were used by the individual farmers cooperating in improving their standing and by the Extension Service as demonstrations to

larger groups of farmers of what can be accomplished by a better knowledge of the facts of a business. This work was done under the general supervision of the farm-management demonstrator and the department of farm management of the agricultural college.

Extension workers have supplemented the 10,000 demonstrations in farm accounting referred to above by inviting farmers to meet with them in groups to discuss the practical uses of their accounting records in the managing and operating of their farms. The point always emphasized in promoting this work is that the real value of the accounts to the farmer is in the final summary and analysis. It is pointed out that accounts enable the farmer to locate those parts of his business that are strong and those that are weak. Studies of the farm business show that very few farms are either high or low in all the factors of success. Each farmer has his own problems,

FIG. 86.—Extension workers meeting with a group of farmers to summarize and discuss their accounts

must study his own facts and conditions with those outside his own business operations, and plan accordingly.

Two Methods in Use

For those farmers who are keeping their accounts throughout the year, two methods are in use by the Extension Service to aid them in summarizing and analyzing these accounts. In some States, farm-account summarizing schools are held. Each farmer in the group summarizes his own account, works out the factors of success, and compares his practices with the average for the group. At the end of such a meeting, he knows how he stands and what factors to place stress upon for higher returns the following year.

Under the other plan, the books are obtained from the farmer and summarized and analyzed in the county extension office or at the State agricultural college. A combined summary of all the accounts

in one county or similar agricultural area is prepared, showing the average standing of the group of farms in (1) rate earned on investment, (2) labor and management wage, (3) yield efficiency of crops raised, (4) returns of each kind of livestock kept, (5) labor efficiency, and (6) economy of production as measured by the net income per acre and the ratio of expenses to total receipts.

More light is also given the farmer in making comparisons of standing by showing not only the averages for the whole area, but the standing of the 10 best and 10 poorest farms as well. This analysis and summary is mimeographed and taken back to the farmers and discussed by some one fully qualified to explain it and aid in applying it to the individual farm. On the personal copy of these figures supplied, each farmer also has his own figures. These are set down alongside those of the average and the high and low groups. He is thus given a definite basis of measuring the success of his business as a whole and of the different parts making up the whole.

Accounts Help Improve Farm Business

Farm accounts properly kept may aid the farmer in the following ways:

(1) They show what things pay best.
(2) Aid in adjusting crop and livestock enterprises.
(3) Help weed out poor livestock.
(4) Help in improving feeding methods.
(5) Help in procuring better equipment.
(6) Help in getting higher production or returns per man.
(7) Help in selling farms or in purchasing farms that are adapted to efficient operation practices.
(8) Furnish information for credit statements when funds are borrowed.
(9) Supply the facts for income-tax returns.
(10) Aid the tenant and landlord in keeping their accounts straight and in a fair distribution of the returns.
(11) Aid in obtaining adjustments in land appraisals for tax purposes.
(12) Supply facts for use on public policy or legislative matters.

On the other hand, more of these complete records are being made available each year to the Extension Service. These records in the past have proved invaluable as guides to sound programs of work and as an aid in showing the best combinations of enterprises in a county, region, or State.

H. M. Dixon.

FARM Returns From 1922 to 1925 Studied When the agricultural situation became recognized as a problem in which all were immediately concerned diligent search was made for facts on which to base solutions. Available data of different types were very numerous, and capable of interpretation in the new uses to which they were put to suit the purposes of persons stating their views.

Acceptable data on incomes of farmers were, however, conspicuous for their absence, though attention centered rather naturally on income as the one satisfactory measure of the net result of many economic forces more or less conflicting. Such income data as there were included the farm business analysis surveys of groups of farm-

ers in scattered localities; the evidence offered in connection with collective bargaining for prices during the war period; and statements made by and for farmers in the press. These were local in character, or "special cases," and for specified short periods, whereas need was felt for a broad view of the industry as a whole, year after year, for comparisons. Analyses of mass statistics were begun by public and private agencies to overcome these deficiencies of the more limited data.

In 1922, a plan to obtain each year direct from farmers statements of the financial results of their own operations was approved. Sufficient numbers of such statements well distributed over the country were expected to yield data from farm sources adequate for the purpose of summarizing changes in incomes of farmers from year to year for the country as a whole and for selected sections, States and divisions, and for farmers producing different classes of products. The first inquiry was for the year 1922, and was sent out in January, 1923. In April, 1923, the averages for the 6,094 farms reporting were published in some detail for the main geographic divisions.

1922 Data Lacked Comparisons

The farm returns for 1922 stood by themselves without means of direct comparison—no other data from the same source and no other statements with quite the same classes of items were available. They were therefore subjected to critical examination by many persons before and after publication. The limitations of the data and of the method were pointed out and an effort was made to overcome the effects of these limitations in the inquiries for subsequent years.

Analysis of the reports for four years shows a consistency in the averages that is remarkable under the circumstances. Average cash receipts of the farms reporting have increased each year, reflecting the combination of good crops and improving prices for products Cash expenses, similarly, increased instead of decreased, but not quite so much, leaving an increase each year in the net results for the farm, and, by inference, in the income of the farmer, also. Yet these increases in the averages for all farmers reporting were not shared equally in any year. The greatest improvement is shown by the reports from the Western States.

The best year for the farmers reporting from the North Atlantic States was 1925 and it was the poorest for those reporting from the South Atlantic States, 1923 appearing best in that division. In the South Central States 1925 appears to have been less profitable than 1924 (the best year there by far) or 1923, but still somewhat better than 1922. In the North Central States, the average for both 1924 and 1925 showed marked improvement over 1923 and 1922. In the East North Central States the gain shown by reports for 1924 over 1923 was less than in the West North Central States, but reports for 1925 showed a further gain in the East North Central States, while reports from the West North Central States showed practically no net improvement.

The averages for each section each year are analyzed in tables in the statistical sections of the Yearbooks. The chances are even that the average net result computed from the reports of the same number of other farmers in the list addressed would not differ more

than 1 per cent from the averages there shown for 1923–1925 or 1.75 per cent for 1922. For other items in the tables and for subdivisions of the United States the accuracy is less. Part of the difference between averages for divisions is due to differences in size or value of farms, and part to type of farming. Differences between years are largely attributable to climatic and market conditions.

Farm Income Highly Variable

Farm income is a highly variable figure, a complex combination of factors of production which themselves differ widely in quantity and in quality, and are variously affected by economic conditions. Even when differences of size of farm and type of product are eliminated by selection of reports alike in these respects the net results

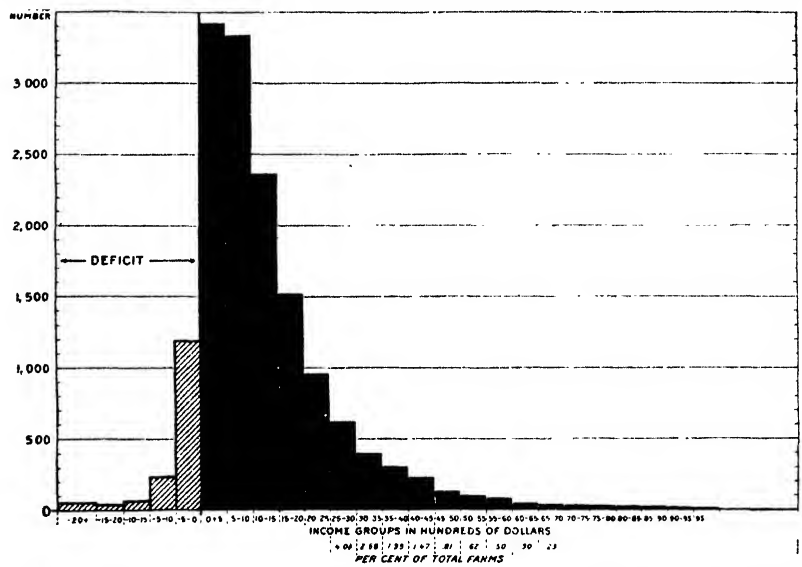

FIG. 87.—Variation in farm returns in 1925. Number and percentage of farms with net results of indicated size as reported by owner-operators in the farm-returns inquiry

are very different. Thus the net result for 1924 computed from the reports for 17 general livestock farms of 200 acres each in a single State varied from $310 to $7,520, averaging $2,478. The average net result was $1,616 for 236 farms of the same type in the same State, ranging from —$2,780 on a 519-acre farm to $9,610 on a 400-acre farm. The net results in 1925 were distributed over a range running from —$29,240 to $85,750. Though a smaller percentage than in previous years showed net results less than zero, still more than 60 per cent of the net results were less than average. (Fig. 87.)

The farmers reporting are voluntary correspondents of the department. Their reports are representative including as they do large and small farms, profitable and unprofitable, each of the dominant types of agriculture, from all parts of the country in about the same proportions as all owners of farms reported by the census. They are not " average " in a sense that would permit using the averages

for the farms reporting as applying rigidly to all farms in any subdivision or in the United States, as may be done with census figures.

A number of factors need further analysis, with more years and greater volume of data, before the possibilities of the inquiry are completely exhausted.

S. W. Mendum.

FAMILY Living Level on the Farm The question of the level of living which the farm family procures from the occupation of farming is becoming rapidly a major problem of American agriculture. The basic factors or elements of farm family living are being analyzed as never before. The cost at which these basic elements are provided is one of the chief concerns of the Nation.

Just what can be said of the farmer's present level of living? What variety and quantity of material and other goods does it contain? What is the cost or value of all the goods used annually by the farm family and how is this value distributed among the principal kinds of goods? What part of this value represents food, house rent, and fuel furnished by the farm not without cost but without the direct expenditure of money?

The most satisfactory answers to these questions are found in the combined results of a series of studies of family living among farmers of selected localities in 11 widely separated States. Almost 3,000 families are included in the studies which were conducted by the United States Department of Agriculture in cooperation with the State agricultural colleges or universities. Those States cooperating, with the number of families in each State were: New Hampshire, 40 families; Vermont, 86; Massachusetts, 81; Connecticut, 110; Kentucky, 370; South Carolina, 202; Alabama, 558; Missouri, 178; Kansas, 406; Iowa, 472; and Ohio, 383.

Data were gathered by the survey method. Typical homes within the localities studied were visited. The average size of family, not including relatives, hired helpers, and others, was 4.4 persons. Relatives and others housed and fed amounted to 0.4 of a person, on an average. Practically all of the schedules were filled between July 1, 1923, and December 31, 1924. Since price levels changed very little between the two dates the results are combined as representing the average value of goods used during one year by the 2,886 farm families, including 1,950 owners, 867 tenants, and 69 hired men.

Food, House Rent, and Fuel

The average value of goods furnished by the farm, $684 worth per family, include foods, $441 per family, use of the farm house (10 per cent of the total value of the house), $200 per family, and fuel, $43 per family. Food constitutes the largest part of the $684 worth of goods furnished, the percentages being 64.5 for food, 29.2 for rent and 6.3 for fuel.

The value of family living furnished by the farm is 42.8 per cent of the total value of family living. Thus, approximately 57 per cent of the farm family living, $914 worth of goods, is provided by direct purchase.

Goods and services purchased include foods, clothing, furnishings, such as furniture, musical instruments, bedding, etc., operation goods, such as fuel and use of the automobile for family living purposes; health facilities, advancement goods and facilities, such as schooling and recreation; personal goods, such as barber's fees, candy, and tobacco; insurance goods, and goods not readily classified.

The average value of all family living is made up of the values of goods furnished and purchased. This amounts to $1,598 per family.

The distribution of the average value of all goods used among the principal kinds of goods grouped according to use is of interest. Food amounting to $659 per family comprises 41.2 per cent of the total. The costs for clothing amounting to $235 per family are 14.7 per cent and the average value of rent, $200 per family, is 12.5 per cent of the value of all goods used.

For all homes an average of 6.8 rooms per family, excluding bathroom, pantry, halls, and closets was reported. Slightly more than one-twentieth, or 5.7 per cent, of the homes were completely modern, that is, fitted with central heating and central lighting systems, running water, kitchen sink, bathroom (equipped with stationary tub and bowl), indoor toilet and sewage disposal. About one-fifth, or 20.8 per cent, of the homes were fitted with a part of the improvements named and almost three-fourths, 73.5 per cent, of the homes lacked all modern improvements.

The average value of furniture and household furnishings purchased during the year amounts to $40 per family, 2.5 per cent of the total value of all goods. The average value of operation goods, amounting to $213, comprises 13.3 per cent of the total. Expenditures for the maintenance of health amount to $61 per family, or 3.8 per cent of the value of all goods used. The average value of goods for advancement purposes amounts to $105 per family and constitutes 6.6 per cent of the value of the total value of all goods.

Goods for Personal Uses

The average value of goods for personal uses amounting to $41 per family comprises 2.6 per cent of the total. The average expenditure for premiums on life and health insurance, life insurance primarily, was the same, $41 per family. The average amount of money spent per family for unclassified goods amounted to $3 per family.

The distribution of the average values of goods for ten $300 total-value groups ranging from less than $600 to $3,000 and over was determined. The proportion that the value of food is of the total value of goods decreases from 54.4 to 30.7 per cent as the total value of all goods rises from $486 to $3,779 per family. On the other hand, the proportion for clothing increases rather regularly from 11.6 to 16.4 per cent with the increased value of all goods. Similarly, the proportion devoted to advancement goods increases from 1.9 to 13.4 per cent. The proportions for the maintenance of health and for insurance increase somewhat irregularly. The proportions for the other groups of goods remain about the same or vary without regard to the rise in the average value of all goods used.

These statements give no indication of the amount of free time for the fullest use of available goods by the different members of the farm family. They take no account of the source of some of the major satisfactions of farm life, such as an ever-ready supply of fresh foods, sufficient space for children to play, contact with growing things and opportunity for apprenticeship. And they ignore those satisfactions which normally should accompany the successful operation of the farm, a cooperative enterprise involving all members of the family.

Further study of the level of living which the farmer and his family get from the occupation of farming will go far toward revealing the conditions which must be improved if American agriculture is to be stabilized.

E. L. KIRKPATRICK.

FERTILIZERS in Concentrated Form Devised At the close of the Civil War the rural population of the United States was about four times the city population. Since that time social and industrial conditions have greatly changed, and at present more than half the total population of the country is to be found in cities and towns having a population of 2,500 or more. The gradual drift of population from the country to the city has been the subject of much serious comment, and it has freely been predicted that this situation if continued must inevitably be followed by a serious shortage in our food supplies.

The proportion of people who live on farms is now only about one-fourth as great as 60 years ago; but instead of a shortage, there is now actually a surplus in many foodstuffs. It is probably true that food supplies are now available to the city dweller in larger quantities and of better quality than at any previous period in our history. The predictions of those who anticipated a shortage in our food supplies failed to materialize for the reason that they did not foresee the wonderful improvements which agricultural research has brought about within a comparatively few years in farm machinery, in the control of insects and plant diseases, and in methods for increasing the fertility of the soil and the productivity of crops. By the application of these various improvements the output per farmer has increased at a rate sufficient to offset the effect of the decrease in the number of people who work on farms.

One of the most important innovations which scientific research has introduced into agriculture is the use of chemical or commercial fertilizers for increasing the growth of crops. It is well known that barnyard manure makes an excellent fertilizer, but the necessity for greater crop production soon increased the demand for this material far beyond the available supply. The commercial-fertilizer industry was accordingly established to make fertilizers from minerals and various organic wastes, such as cottonseed meal, tankage, etc.

Organic Wastes as Feed

It has recently been found, however, that these organic wastes are also suited for feed for livestock, and consequently the supply available for fertilizers is falling far short of the demand. The Bu-

reau of Soils, foreseeing that this condition was likely to arise and that sooner or later the fertilizer industry would be required to make use of the air we breathe as a source of the nitrogen used in fertilizers, began to investigate the greater possibilities of chemical fertilizers, including the products resulting from "fixing" the nitrogen of the air into fertilizer materials.

The fixed-nitrogen products differ from the ordinary fertilizer materials in containing, as a rule, a high percentage of the plant-food constituents, whereas most fertilizer minerals and waste products are low-grade materials. The ordinary mixed fertilizers, as now manufactured from these low-grade materials, are also low grade, containing on an average only about 15 per cent of the plant-food constituents. If the materials prepared from the air were used in fertilizers, the alternate procedure would have to be adopted of either improving the grade of the fertilizer or of diluting the mixture

FIG. 88.—Unloading manure scows. A common scene in the trucking sections of the North Atlantic States when manure was plentiful and cheap

with sufficient inert material to give the usual grade. The latter procedure would involve an additional expense in the manufacture of fertilizers, whereas an increase in the percentage composition of the fertilizer should decrease the cost to the farmer by reducing freight and handling charges.

Unfortunately most of the materials, so far prepared from the air are disagreeable to handle or otherwise unsuited for use on the farm. Many have the property of absorbing such a quantity of moisture from the air that they cake or become sticky, and can be applied only with difficulty.

A study of these concentrated materials was accordingly undertaken by the Bureau of Soils several years ago to determine the best means of adapting them for use in fertilizers. It was found that their physical condition could be greatly improved at little or no expense by a slight modification in the process of their manufacture, resulting in a product having the form of small spherical grains.

It was also observed that the properties of these materials could be still further improved by combining them in the process of their manufacture with certain other fertilizer compounds of mineral origin. These materials do not absorb moisture from the air; they are easy to handle, and they can be readily drilled in the field with the greatest uniformity. They likewise have the further advantage of containing two of the three major plant-food constituents instead of one, as in the original materials prepared from the air. By proper selection of these new materials it is possible to prepare mixed fertilizers containing as much as 75 per cent of plant-food material, or five times as much as that carried by the average complete fertilizer.

Cost Less to Farmer

The term "concentrated fertilizer" has been applied by the Bureau of Soils to mixtures which contain 30 per cent or more plant-food material. This term has now been adopted by the fertilizer industry, and during the past year most of the large fertilizer manufacturers have prepared for the first time one or more mixtures of this class. The labor of handling, hauling, and distributing these fertilizers is not only less than for the standard grades, but their actual cost to the farmer is also less per unit of plant food.

That the value of fertilizers in increasing plant growth is not diminished by increasing their concentration is shown by the field tests of the Bureau of Plant Industry and by such practical demonstrations as those recently made in California, where a new world's yield record of more than 1,000 bushels of potatoes was recently obtained with a concentrated fertilizer containing 47 per cent of the plant-food constituents.

The recommendations of the Bureau of Soils in favor of higher-analysis fertilizers are thus being adopted by the fertilizer industry; but many problems still remain to be solved. It is reasonable to conclude that further work on the subject will be followed by still greater improvements in the manufacture and use of concentrated fertilizers.

William H. Ross.

FERTILIZER in Small Bulk Being Tested

The term "concentrated fertilizers" means the use of fairly pure fertilizer salts in combinations giving a very high-analysis plant food. There is no way to concentrate the ordinary fertilizer mixtures of commerce. The latter consist often of materials which carry a low plant-food content so that the mixtures may contain as little as 10 per cent of total phosphoric acid, potash, and nitrogen, though usually they contain 14 to 20 per cent. With the use of the ordinary materials of commerce, such as acid phosphate, bone phosphate, cottonseed meal, tankage, sodium nitrate, etc., fertilizers carrying a higher percentage of plant food than 20 per cent are rarely possible. The introduction of new fertilizer salts from the chemical industries, such as treble superphosphate, ammonium phosphate, ammonium nitrate, and a number of double salts carrying potash as well as nitrogen, urea, etc., are making

possible the preparation of fertilizers of much higher plant-food content, two, three, and four times as much as the ordinary fertilizer mixtures of commerce. These new combinations produced by modern chemical research are known as concentrated fertilizers.

These concentrated fertilizer salts and their combinations have much to recommend them, but they also present many new and puzzling problems for solution before they can be generally used in American agriculture. In the first place their concentrated character means less labor in factory and in field, less bagging, less hauling and less freight, also greater purity of product and easier standardization. Instead of 10 bags to the ton of fertilizer, 2 or 3 bags only will have to be handled, shipped, and distributed on the farm to obtain the same quantity of plant food. This will mean cheaper

FIG. 89.—Experimental potato field in Maine on which concentrated fertilizers were used

plant food, pound for pound. In addition, fertilizer improvements in chemical manufacture, by nitrogen fixation from the atmosphere, cheaper methods of phosphoric acid manufacture, and new potash sources, will be stimulated by the increasing sales of these products, so that cheaper production is in evidence.

Has Some Bad Qualities

On the other hand the concentrated character of the chemicals involves some undesirable qualities. Many chemicals possess to a greater or less extent the property of becoming moist under humid conditions and on drying out again to become lumpy, hard, and "cake," as it is called. A drillable fertilizer is an absolute necessity under present American conditions of fertilizer practice and the present enormous fertilizer industry of approximately $250,000,000 annually is built upon this basis. Millions have been spent in prac-

tice and research to produce drillable fertilizer from the present materials of commerce. Further large sums must be spent in research before this problem is satisfactorily solved in connection with concentrated fertilizers so as to produce only salts or compounds which can withstand climates of widely varying humidity without becoming too moist or caking too hard.

The problem of distribution in the field is likewise great and new machines may have to be designed. Concentrated fertilizers are exceedingly strong in their action and must not come in contact with the seed or with delicate growing-plant tissue. Distribution in the soil at a uniform rate is therefore more imperative with the concentrated fertilizers than with the ordinary strengths to avoid injury to seed and to germination. Modern science is coping with these problems in this and other countries and considerable progress has already been made to make these new plant-food carriers safe and profitable in agriculture.

FIG. 90.—Farmers inspecting one of the department's concentrated fertilizer experiments

The importance of concentrated fertilizer salts and their mixtures is already well recognized in Europe, and considerable field experimentation is being conducted in England, France, Germany, Italy, and other countries to determine the value of such materials on their important crops and soils. It is obvious that while such results will be of interest to the American farmer and fertilizer manufacturer it will be only through experimental work in this country under our own conditions of climate, soil, and farm equipment that proper evidence can be obtained relative to the action and value of concentrated fertilizer salts on crop production.

When carefully and properly used excellent results have been obtained in Europe and in America. In the department's experiments cooperatively conducted with a number of State experiment stations on different crops and soils, there were obtained with such small quantities of concentrated fertilizers as good yields as were

obtained with an equivalent larger quantity of the ordinary fertilizers. Some crops especially sensitive to one or the other of the concentrated plant foods have been slightly injured in germination and consequently in stand, but it is hoped that with further study of the methods of distributing the chemicals with improved machinery, safe results will ultimately be assured.

Best for Intensive Cropping

The use of the more concentrated nitrogen materials from atmospheric nitrogen fixation, either combined chemically with other plant food elements such as phosphate or potash, or as a mixture of ammonia, phosphate, or potash salts in the form of concentrated mixed fertilizers, will naturally be greatest under crops like cotton, potatoes, and other truck and fruit crops where intensive agriculture is practiced, rather than under crops grown under extensive systems of agriculture, such as wheat and corn. That ultimately fertilizers will even be used with these crops is inevitable, but there are many problems yet to be solved before it can be done economically. The stabilizing influence which the production of highly concentrated nitrogen salts and other fertilizer salts will have on the fertilizer market will aid greatly in the extended use of fertilizers under all of our crops and will tend to lower the cost of production of our agricultural commodities.

OSWALD SCHREINER.

FERTILIZER Nitrogen From Organic By-Products Valuable

Do you belong to the once numerous group of farmers who judged the potency and value of a commercial fertilizer by the robustness of its odor? If so, some of the materials that the department has recently pointed out as possible sources of organic fertilizer nitrogen, or ammonia, may not appeal to you, strongly.

There are by-products of the manufacture of cocoa and chocolate, for example, that carry the pleasing fragrance of a freshly opened can of breakfast cocoa, which have been produced in such quantities and held so cheaply that the Bureau of Soils has looked into the possibility of utilizing them for fertilizer purposes.

It was found that upwards of 20,000 tons of by-product cocoa cake is produced annually in the United States. This presscake is the residue from the manufacture of cocoa butter, of which enormous quantities are consumed in the confectionery industry. Like breakfast cocoa, much of the by-product cake results from the pressing of roasted and shelled cacao beans, but the cake is lower-grade material and usually contains less of the fat than beverage cocoa powders.

Viewed as fertilizer material, the by-product cocoa cake (or when ground, "cocoa meal") is somewhat like castor pomace in chemical composition. The cocoa, however, contains about 4 per cent of nitrogen (equal to 4.9 per cent of ammonia), whereas castor pomace will usually contain as much as 5 per cent of nitrogen, or about 6 per cent of ammonia.

Other by-products of the cocoa industry are the shells, known to the trade, after grinding, as "cocoa shell meal" and extracted press-cake, or defatted cocoa. The shells are produced wherever cacao beans are roasted for the manufacture of cocoa and chocolate. Production of the extracted or defatted cocoa, on the other hand, has been confined to a single locality.

Nitrogen Content of Shell

Analyses show that the shells contain from 2.5 to 3 per cent of nitrogen (3 to 3.6 per cent of ammonia); and the dried defatted cocoa, about 4.4 per cent of nitrogen, or 5.3 per cent of ammonia. Cocoa by-products contain small quantities of phosphoric acid and upward of 2 per cent of potash. When applied to the soil, the cocoa by-products, like cottonseed meal and castor pomace, supply organic matter as well as fertilizing elements.

Fertilizer materials like these, known to the trade as "organic ammoniates," command comparatively high prices, as a rule. In view of this fact, the cocoa by-products seem to offer possibilities as economical sources of organic nitrogen, particularly in the vicinity

FIG 91. —A source of nitrogen from shellfish waste

of the centers of cocoa and chocolate manufacture—as New York, Philadelphia, and Boston, in the East, and San Francisco and Los Angeles, on the Pacific coast.

Shellfish Wastes

There are other trade residues that have attracted attention and which more nearly satisfy the one-time requirements, namely, that a fertilizer should possess "an ancient fishlike smell." The refuse materials from the packing of crabs and shrimps, for example, are richer in plant-food elements, after drying, than the cocoa by-products.

Dried crab waste is a refuse from the crab-meat industry along the lower shores of Chesapeake Bay. A representative sample, after drying, was found to contain 5.2 per cent of nitrogen (6.3 per cent of ammonia) and quantities of phosphoric acid and lime equivalent to 7.4 per cent of bone phosphate, and over 30 per cent of carbonate of lime.

Shrimp waste and shrimp bran are by-products of different branches of the shrimp-packing industry located along the South

Atlantic and Gulf coasts. The so-called "waste" is the refuse of the canneries and is artificially dried. It contains about 8 per cent of nitrogen (9.7 per cent of ammonia), 10 per cent of bone phosphate, and 9 per cent of carbonate of lime. Shrimp bran consists of the air-dried heads and shell refuse separated from the meats, after the entire shellfish has been cooked in brine and then sun-dried.

As a result of the brine treatment, the bran may contain as much as 9 per cent of common salt, a substance not generally welcome in fertilizer materials. Less than 2 per cent of salt is normally present in the dried crab and shrimp wastes. The bran contains nearly 7.5 per cent of nitrogen, or about 9 per cent of ammonia, 8 per cent of bone-phosphate, and 7 per cent of carbonate of lime.

Such shellfish residues should prove valuable as organic-ammoniate fertilizers. With careful watchfulness of the salt content, they should also prove useful in the feeding of pigs or other livestock. And, in the districts in which they are produced, their use ought to be economically advantageous.

New trade wastes of similar character appear from time to time as the result of industrial developments. It is the aim of the Department of Agriculture to aid in all practicable ways in the conservation and utilization of waste products which give promise of agricultural usefulness.

G. P. Walton.

FERTILIZER Purchasing by Farmers Fertilizers are bought largely by the eastern farmers, and specialists, such as the potato growers of Maine, tobacco growers, fruit growers, and cotton planters. It is believed that the buying of fertilizers should be very much extended, and that general farmers should purchase larger quantities, and that fertilizers could be used by dairy farmers and other agriculturists who now see little need of their use.

The purchase of fertilizers is only a part of a farm program to keep up the fertility of the soil, so that a proper balance should be established between the money spent for fertilizers, on the one hand, and for lime, feed for livestock, drainage, tile, irrigation, etc., on the other. For example, to get the best results with fertilizer it may be often necessary to purchase agricultural lime as well. It is somewhat difficult to give general rules for buying fertilizers, but other things being equal, the following suggestions are offered:

Suggestions for Purchasing

(1) Buy complete fertilizers which carry nitrogen, phosphorus, and potassium—the three major crop nutrients.

(2) Buy high-analysis materials, mainly with a view to saving freight charges.

(3) Buy materials at the lowest cost per unit; for example, acid phosphate rather than bone meal.

(4) Buy materials carrying available fertilizer constituents; for example, water-soluble potash rather than ground feldspar; also, acid phosphate rather than raw phosphate rock.

(5) Buy standard, tried-out materials rather than materials that are unknown or untried. Standard materials are acid phosphate,

bone meal, basic slag, ammonium sulphate, nitrate of soda, fish scrap, cotton-seed meal, animal tankage, dried blood, sulphate of potash, and muriate of potash.

(6) Buy materials that are locally available rather than those on which high freight charges must be paid. Examples are, cotton-seed meal in the South, animal tankage near stockyards, and acid phosphate near factories which produce it.

(7) Buy from reliable firms rather than from firms having no business standing.

(8) In buying, do not allow simply the price of the fertilizer to govern its purchase. The main idea in buying fertilizers is to buy materials which will produce a profit. It may be unwise to use the wrong analysis or ratio in a fertilizer mixture even if it is cheaper per unit. (A unit is 20 pounds or 1 per cent of a ton. Example, 16 per cent acid phoshate has 16 units of phosphoric acid). It is not advisable to get, for example, a fertilizer high in potash and acid phosphate, such as a 0–10–10, for top-dressing truck crops even if it could be bought very cheaply, when a fertilizer like a 7–6–5 has been found by experience to produce the best results, even though the cost per unit of the first mixture is very much lower than that of the second. On the other hand, the first fertilizer may prove more satisfactory than the 7–6–5 mixture on certain muck soils even at a higher cost per unit. In the effort to sell high-analysis mixtures the suitability of the fertilizer to the soil and crop is often overlooked. An analysis of 0–10–10 means a fertilizer containing no ammonia or nitrogen, 10 per cent available phosphoric acid, and 10 per cent water-soluble potash. In the North the percentage content of nitrogen or ammonia is given first in a fertilizer analysis; and in the South the percentage of phosphoric acid is usually given first. The percentage composition of potash is always the last figure of a fertilizer analysis.

Mixed Fertilizers in Demand

A decision often has to be made between the buying of simple materials like nitrate of soda and acid phosphate and complete mixtures. The common practice in this country is to buy mixed fertilizers rather than simple materials, and apparently this practice generally meets the American conditions of high labor and comparatively cheap land. Where a simple material is satisfactory, however, it will often give a larger return for the money invested than complete goods. The wide use of acid phosphate alone is apparently justified by economic conditions.

When complete mixtures are needed the farmer has a choice between factory-mixed and home-mixed goods. Factory-mixed goods sold by reliable fertilizer companies are fully satisfactory, and the main reason for home mixing is a desire to obtain fertilizer at a lower cost. Home-mixed fertilizers are sometimes cheaper, but the farmer should not try mixing his own fertilizers without making a real study of his soils, crops, and the fertilizer situation. He should get advice from Federal and State fertilizer experts, and read all the publications available on the subject. Home mixing is satisfactory when properly done, but it should not be attempted without adequate knowledge of the subject. (Fig. 92.)

When buying fertilizers it is well to get competitive prices from as many firms as possible, and it will pay also to deal with reliable firms. It is often possible to get quotations both from local and distant firms. Lists of such firms may be obtained from your county agent, State experiment stations, or the United States Department of Agriculture.

Buying Through Cooperatives

In some sections it will pay to buy fertilizers through cooperative buying associations. By pooling orders it should be possible for farmers to obtain price concessions, and also a chance to know exactly what the fertilizer mixtures are made of. The same care should be exercised in dealing with cooperatives as with fertilizer companies; because even though a low price is obtained, it may not be on a really

FIG. 92.—Getting acquainted with fertilizers. Their proper mixing and use depends on a knowledge of them

competitive basis. In times of severe competition there is the same temptation in the fertilizer industry as in other industries to substitute cheaper materials in standard mixtures. This has been rather noticeable in the past when inorganic forms of nitrogen have been substituted for some of the expensive organic ammoniates such as animal tankage and fish scrap.

The problem of fertilizing the soil is an important one, and will be of greater importance in the future. The farmer's time spent in studying bulletins and textbooks on fertilizers will probably yield him as great a return as the study of other farm problems.

To help the farmer buy fertilizers intelligently the Department of Agriculture will be glad to give him information on the needs of his soil, the value of fertilizing materials, and the home-mixing of fertilizers. It will furnish lists of reliable firms which sell fertilizers in his community. The department believes that the use of commercial

fertilizers is a profitable practice and that the quantities used in this country will steadily increase. It will pay many farmers to increase the use of fertilizers, but they must study the problem carefully and use common sense in making their purchases.

C. C. FLETCHER.

FIRE-Scar Damage in Woodlands Heavy The owners of small woodlands in the eastern United States when making a cutting often find that many trees are defective; particularly in hardwoods, most of the decay is in the butts. The highest grade and most valuable timber is found in the first log. When decay is present in this log, the actual loss is greater in proportion than in any other part of the tree.

Studies and surveys show that as high as 19 per cent of the volume of the hardwoods in our eastern woodlands is often lost because of decay. This means that approximately one-fifth of the timber crop is lost. No grower of timber can afford such a loss, especially where it is a preventable one. Investigation in hardwood forests indicates that more than 90 per cent of basal or butt rots enter through fire scars. This shows how important it is to keep fires out of the forest.

It is hardly necessary to call attention to the obvious amount of death of small trees that takes place during forest fires. In heavy fires a large number of trees, both small and large, are killed outright. Those remaining are often badly burned, especially at the base, nearest the ground. Such burns kill the bark and the growing layer of the sapwood beneath it, check all growth in the injured region at once, and result in fire scars. Fire scars tend to dry out, and form cracks or checks. Tiny spores or seeds of numerous species of wood-rotting fungi blow about in the forest, especially during the growing season. Some of these spores lodge either in wood cracks, or on the surface of the scars, and germinate, producing a moldlike growth which penetrates and rots the wood.

Classes of Wood-Rotting Fungi

Three general classes of wood-rotting fungi, not sharply set apart, are found in forests; one attacks and rots the dead sapwood, another preferably rots the heartwood, and another may attack both the sapwood and the heartwood, the latter being composed of dead wood cells. Young trees usually contain little or no heartwood and when fire-scarred are attacked in the scars by fungi which rot sapwood. In older trees when burns are severe, as they usually are after repeated fires, the heartwood is exposed. It is through these deep-seated scars that the fungi which rot the heartwood are most likely to gain entrance.

In fire-scared trees the scars commence to heal by the formation of folds of new sapwood and bark on the outer edges. These folds enlarge and gradually grow together, closing the fire scar. If the wood beneath the scar has begun to rot, this rotten wood is now shut in, and confined to the interior of the tree. In case of large compound fire scars, due to repeated fire injury, the scars often re-

main open, and a cavity is formed by the action of wood-rotting fungi at the base of the tree. This cavity due to continuous rotting may extend upward for several feet in the interior of the trunk.

The growth of fungi which rot the sapwood is usually checked as soon as the wound is closed by healing and the decay ceases. There are, however, some species of fungi that attack both the sapwood and the heartwood. These and the fungi which attack only the heartwood may continue to rot the heartwood of trees after the fire scars are closed by healing. Trees more than 25 to 30 years old, while less likely than young trees to be killed outright by fire, are more likely to suffer from decay under fire scars.

Other Places Where Rot Enters

Not all wood rots gain entrance through fire scars; some may enter sprout trees at the base through the old stump. They may also enter wounds, especially those with exposed heartwood, on any portion of the trees, such as severe lightning scars, broken limbs, branch stubs, ax wounds, etc. Pines, spruces, and other coniferous trees in farm woodlands frequently suffer from heart rots which gain entrance through branch stubs, etc., but in such trees there is also a large amount of butt rot entering through fire scars.

From this it will be seen that it is as necessary to keep fires out of woodlands as it is to keep the weeds out of cultivated crops. The highest yield of best grades of timber can be obtained only in woodlands where fires are prevented. It pays to prevent fires in woodlands.

George G. Hedgcock.

FLAX—A Drought-Resistant Form Now Developed

"Saginaw" is a variety of fiber flax adapted to conditions in the United States, where the climate is generally warmer and drier than in the flax-growing regions of northern Europe. It has been developed by selection, by the office of fiber investigations in the Bureau of Plant Industry. Nearly all of the fiber flax of the world is grown from seed originating in the region of Pskof in Russia. That is a region of abundant moisture with a short growing season of long days, between 56° and 58° north latitude. None of this Russian seed is of a pure type. Some of it produces tall slender stalks with few seed bolls and a tendency to mature late; other seeds in the same lot produce shorter stalks with more seed bolls ripening earlier.

When this seed is sown by the fiber flax growers in Michigan and Oregon between latitudes 42° and 45°, where the summer days are shorter, the climate warmer and drier, and the crops are harvested for both fiber and seed production before all of the plants are fully ripe, there is an increase in the proportion of seed from the shorter early maturing plants. The growers said that the type deteriorated or the "flax ran out" in a few generations and it was necessary to import fresh supplies of seed at least once in four years. Most of the seed imported was Blue Blossom Dutch, of Russian origin grown one or more years in Holland.

In 1909 more than 40 fields of fiber flax were inspected in the "Thumb" district east of Saginaw Bay in eastern Michigan and 1,200 tall plants were selected. Each plant was wrapped by itself to prevent any loss or mixture of seeds. The selections were based on height and straight slender stalks free from basal branching. These plants after drying were measured, weighed, and the seed bolls and seeds counted. The seeds from 100 of the best plants were saved separately and planted at Croswell, Mich., in May, 1910. They were planted, one seed in a place, 3 inches apart, at a uniform depth, in uniform soil, and a further selection was made from the plants produced.

Superior Type Produced

Selection and comparison were continued until a type was produced that grew taller and better than others in dry seasons as well as in moist years. This type had tall slender stems but with comparatively few seed bolls. The seed supply, beginning with a few ounces, was increased with difficulty. It was sown in drills and cultivated to increase the production. Winter crops were grown in Porto Rico and in Alabama to increase it twice in the same year. Storms destroyed the increase plats three different years and a fungous disease necessitated its destruction one year.

Sufficient seed was finally obtained to distribute small quantities to commercial growers who have increased it and have very carefully kept it pure. These growers state that it is the first fiber flax they have ever grown that does not "run out." It makes an especially good showing compared with Blue Blossom Dutch or other European flaxes in a dry season.

There were 700 acres of "Saginaw" flax grown in Michigan in 1925, and more than 8,000 bushels of seed for sowing have been saved from an especially good crop of 1,000 acres in 1926.

LYSTER H. DEWEY.

FLAXSEED Price Largely Influenced by Argentine Crop The size of the flaxseed crop in Argentina, the most important flaxseed-producing country, appears to be the major factor affecting flaxseed prices in the United States. The influence of the Argentine crop, which is harvested early in the winter and begins to come on the United States market toward the end of January, is felt in our flaxseed prices through the following fall when the bulk of our crop is marketed. In addition to the Argentine crop, the production of flaxseed in the United States and Canada are important price factors, and also the level of building-material prices, which reflects variations in demand in the building industry as well as variations in the general level of commodity prices.

For many years the United States has been on an import basis for flaxseed. It draws its additional supplies chiefly from Argentina, and to a less extent from Canada. During the five-year period, 1921-1925, the production of flaxseed in Argentina averaged 54,000,000 bushels, as compared with an average of 18,000,000 for the United States, the second largest producer. The next most important countries, arranged in order of importance, were India, Russia, and Canada.

Figure 93 shows the relationship of the production of flaxseed in Argentina in the preceding winter, plus the current season's production in the United States and Canada, to the price of No. 1 flaxseed at Minneapolis, average September to November, divided by the Bureau of Labor index of building-material prices. The years included are 1910–1925, omitting the year 1917, when a crop failure in Argentina the previous winter, in addition to shipping difficulties caused by the war, brought on an abnormal market situation. The low demand for flaxseed during the years 1918 to 1922 is evidenced by the lower curve, which follows the same general tendency as the main curve, but on a level averaging some 50 cents a bushel lower.

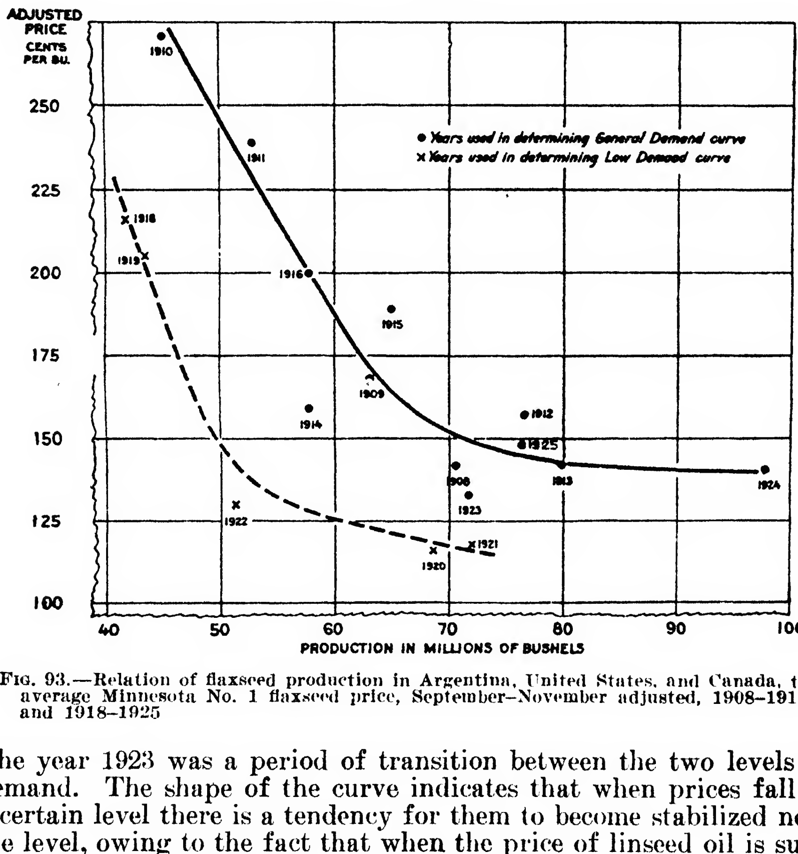

FIG. 93.—Relation of flaxseed production in Argentina, United States, and Canada, to average Minnesota No. 1 flaxseed price, September–November adjusted, 1908–1916 and 1918–1925

The year 1923 was a period of transition between the two levels of demand. The shape of the curve indicates that when prices fall to a certain level there is a tendency for them to become stabilized near the level, owing to the fact that when the price of linseed oil is sufficiently low it displaces other oils, particularly in soap making, with a consequent broadening of demand.

E. M. DAGGIT.

FLAX Rust Control Through Immune Strains Possible Flax rust is similar to the familiar black stem rust of wheat, in some respects, and yet very different in others. It can not attack wheat, nor can the wheat rust attack flax. Each of these rusts has four distinct stages, the most conspicuous of which are the red and black stages. All four stages of the

flax rust are produced on flax, and on no other plants, except that certain species of wild flax are attacked. The stem rust of wheat, on the other hand, produces its red and black stages on wheat, but requires an entirely different host, the common barberry, on which to develop its two other stages and complete its life history. The organism causing flax rust lives over winter, in the black stage, on infected straw and can go directly back to flax the following summer, when the spores of the black stage germinate. The wheat-stem-rust organism lives over winter in a similar manner, but can not go directly back to wheat from the black stage. It must first go through the barberry. The wheat-stem-rust parasite, therefore, has a weak place in its life history which the flax rust parasite does not have.

As the control of flax rust can not be effected by destroying an alternate host, other methods must be used. The most promising of these is the development of rust-resistant varieties. This method has been used with success in controlling the destructive wilt disease of flax, but, unfortunately, most of the wilt-resistant varieties now in use are susceptible to rust. This fact has not been generally appreciated. It has become the practice among some of the growers of wilt-resistant flax to sow the crop several years in succession on the same land, feeling they are safe in doing so because their flax is resistant to wilt.

FIG. 94.—Rust-immune flax selection (center) produced by crossing susceptible fiber flax (right) with rust-immune, wilt-resistant seed flax (left)

Susceptible to Other Diseases

The fact that the wilt-resistant flax is susceptible to other diseases either is not recognized or is overlooked. The multiplication of rust is especially favored by such a system of farming, and, when it is followed, damage from rust is likely to be severe. Flax rust not only causes reduced yields of seed, but may also cause the stems of fiber flax to be of very inferior quality, or even useless for fiber purposes.

During the past five years, investigations on the control of flax rust have been made in cooperation with the Minnesota agricultural

experiment station. Varieties of seed flax which are entirely immune from rust have been found. Some of these are also highly resistant to wilt. These have been crossed with susceptible varieties of both seed flax and fiber flax in order to develop improved varieties of both types of flax, combining immunity from rust wilt resistance.

Figure 94 shows the progress in the development of varieties of fiber flax immune from rust. The selection in the middle is immune from rust and was produced by crossing the susceptible fiber flax on the right with the rust-immune, wilt-resistant seed flax shown at the left.

ARTHUR W. HENRY.

FLOODS and the Farmer Not the least in importance among the many hazards of farming in the United States is that of loss by floods.

In some sections, especially in the rich bottom lands along many streams, the hazard is present a large part of the crop-growing season; in other regions and these form much the larger area, the hazard is absent or of little moment. The menace is greatest in the spring and early summer and again in the fall when, although crops have matured they may not have been gathered into barns or other safe places. Severe midsummer floods are infrequent and, as a rule, confined to limited areas.

A demand for accurate statistics of flood loss has existed for many years. Owing to the difficulties attending the collection of such statistics the demand has been met only partially and those put forth herein, although the best obtainable, are submitted as little more than rough estimates and, moreover, probably do not cover more than 75 per cent of the total. For this reason an additional 25 per cent has been added as will appear in the next paragraph.

Flood Loss in United States

During the 15 years ended with 1925, the reported loss from floods aggregated $530,542,660 or more than $35,000,000 annually. Adding to this estimate 25 per cent for unreported losses (loss to railroads is rarely reported) the amount becomes $707,390,213 or more than $40,000,000 annually on the average.

Of this huge total the loss to agriculture—crops, livestock, farm buildings and property and erosion—was $172,186,987. Nearly 33 per cent of the total loss fell upon the farmer. These figures are impressive when it is considered that loss to the farmer is largely unavoidable, that growing crops can not be removed to places of safety. On the other hand, the loss of matured crops in the fall when left in the fields along river bottoms that are subject to overflow is on a different footing. The obvious remedy is never to leave a matured crop in fields subject to overflow.

The Weather Bureau undertakes to warn dwellers of the lowlands along the larger streams of the coming of dangerous floods, but that service can not be extended, for reasons well understood, to the small streams that are liable to flood from the so-called cloudburst rainfall.

Incomplete statistics for the 15 years considered show an estimated saving to agricultural interests through the medium of flood-warnings of $38,185,240 or a little more than $2,000,000 per annum on the average.

The cost to the taxpayer for this service is very small, probably about 1 per cent of the total amount saved, interest included.

The farmer is indirectly affected by flood loss beyond the farm, as the cost thereof must be absorbed somewhere in the world of business and finally reflected back to the consumer in the shape of increased cost of the supplies which he must purchase; on the other hand, he is benefited, although to a less extent, by decreased costs passed on to him by business interests that have been able to make a saving through the medium of flood warnings. These warnings have been freely distributed in the past, yet the very recent development of radio transmission has so enormously increased their distribution as to now make it practicable for almost every one interested to receive them more readily and much earlier than ever before.

FIG. 95.—Flood scene near Shreveport, La., December, 1902

H. C. FRANKENFIELD.

FLOUR Consumption Falling in the United States For the past 40 years, the per capita consumption of wheat flour in the United States has declined more than 20 per cent. In 1879, the earliest year for which adequate data are available, the annual consumption of wheat flour was equivalent to 5.6 bushels per person. Since 1919 it has been approximately 4.25 bushels. This decline in per capita consumption is about 16 per cent below what it was before the war and 24 per cent below that of 1879. From 1879 to 1905 there was a slight gradual decline, amounting to about two-tenths of 1 per cent a year. From 1914 to 1921, there was a much more rapid decline which averaged more than 2 per cent a year. The low point of the decline, less than

4 bushels per person, was probably reached in 1918, the year of war-time restrictions. In 1919, when war-time restrictions on the use of flour were removed, consumption increased to 4.7 bushels, but declined to the present average of 4.25. Since 1921 the consumption per person has remained practically the same.

In Figure 96 these statements are borne out by two sets of data. One set shows the per capita disappearance of wheat flour for census years, as computed from total flour millings, exports, and changes in stocks. The other, the disappearance for food, feed, and loss for each crop year since 1900, is based on the total supply of wheat at the beginning of the year from which have been deducted exports, seed requirements, and stocks on hand at the end of the year. The variations shown in these figures are probably due to changes in the quantities fed and used for other than food consumption. Both sets of data, however, show a general downward trend, particularly between 1900 and 1921.

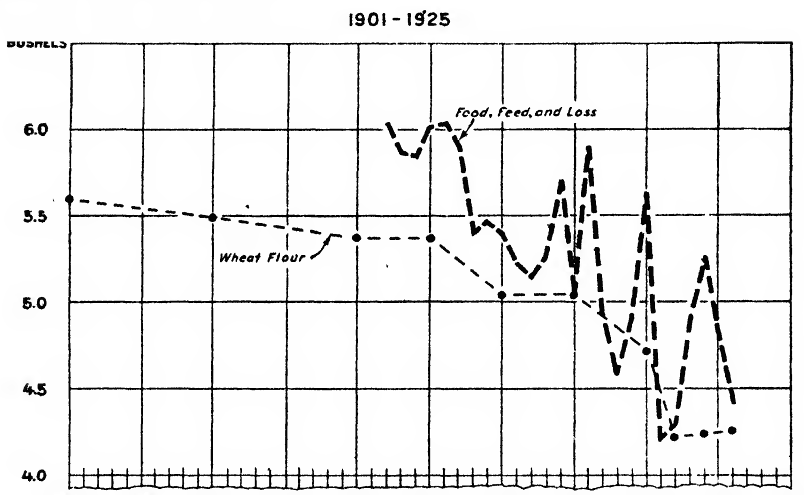

FIG. 96.—Disappearance of wheat flour per capita expressed in bushels of wheat for census years 1875–1925, compared with the disappearance for food, feed, and loss in the crop years 1901–1925

Causes of Decline

The reasons for this long-time decline in consumption of wheat flour are the drift of population to the cities, increased average purchasing power, the rise in the commercial bread-baking industry, and the possibly continuing effect of war-time restrictions on wheat consumption. Our city population, which in 1920 represented 51 per cent of the total, compared with only 35 per cent in 1890, consumes proportionately less flour and proportionately more other food than the rural population. As country people adopt city habits when they move to town, it is inevitable that the shift of population should be accompanied by a decline in per capita consumption of flour. This tendency has been further strengthened by the increased average purchasing power. The present money income of industrial employees will buy at least 20 per cent more goods than the corresponding pre-war income would have purchased. This greater buy-

ing power enables consumers to purchase larger quantities of fruits, vegetables, and dairy products at the expense of wheat flour.

With the relatively greater increase in city population has come the rise of the baking industry. Large bakery units undoubtedly now use flour more efficiently than did the smaller units two decades ago. Moreover, the development of high-quality wheat makes possible the manufacture of bread and wheat products with less flour than was formerly required. Furthermore, other ingredients than flour may now form larger proportions in the composition of the commercial wheat loaf. According to the census of 1923, for instance, the baking industry, besides consuming 31,000,000 barrels of flour valued at $218,000,000, used other ingredients such as eggs, butter, lard, milk, fruit, and nuts, valued at $265,000,000. These other ingredients undoubtedly tended to satisfy wants which otherwise would have meant a greater consumption of flour.

Facts Have Bearing on Production

These facts have a bearing on the production of wheat in the United States for domestic consumption. Should the general downward trend in wheat-flour consumption be continued into the next decade, the total quantity of wheat consumed as flour would remain approximately at the present quantity of about 500,000,000 bushels, even with an increase of population. On the other hand, if it be assumed that the per capita consumption of wheat flour has now become stabilized at approximately 4.25 bushels, and if population continues to increase at the rate of 1,500,000 persons a year, the production of wheat for domestic flour purposes would need to be increased by about 65,000,000 bushels by the end of the next 10 years. Any increase in production greater than that would enlarge the quantity of wheat grain and flour to be disposed of in foreign markets.

L. H. Bean.

FOOD Studies Throw Light on Diet Problems

A few years ago doctors, dietitians, and experts of one sort or another were the only ones who cared much about the composition of foods. The average person was satisfied if the food that appeared on his table three time a day tasted good and kept him from being hungry between meals. But times have changed. Calories, protein, carbohydrates, iron, and calcium are household words applied to foods. Everybody is trying to eat the proper number of calories and to be sure that he is getting enough iron to make red blood and enough calcium to build bones and teeth. The tables on food composition issued 25 years ago by the Department of Agriculture are still the best answer to some of the questions raised. Many new facts have come to light since these tables were published, however, and the Bureau of Home Economics is now bringing these food figures up to date.

Foods vary a great deal more in what they contain than even the scientists used to think. Milk is not just milk. Every dairy farmer knows what a difference even 1 per cent of butterfat will make in his creamery check at the end of the month. He knows also only too well that every cow in the herd can not be relied on to give milk

of a certain standard. So it is with apples, onions, pork, beef, poultry, and all the other foods raised on the farm and many prepared in factories. They may differ widely in the food elements they contain.

These differences may count just as much in food value as the change in butterfat in milk does in dollars and cents. It is not possible to say that a pound of beef or of cheese or other food contains so many calories, so much protein, and all the rest without knowing more about that particular piece of beef or cheese.

Variations in Meats

Meat is one of the hardest foods on which to make general statements about composition. It is not difficult to see why the carcass of a very thin steer, for example, that would have sold as "common" must be entirely different in its make-up from one that came from a well-fattened animal that would have been graded "good" or "choice." Compared on a percentage basis with the fat one, the thin carcass might have nearly twice as much bone and its edible portion only about one-third as much fat. One might have a fuel value of 850 calories per pound and the other 1,900 calories. Even wider extremes than these can be found on the retail market. Plainly, the steaks, roasts, and stews from two such animals will not be much alike in food value.

Moreover, the cuts even in one carcass vary almost as widely. Some cuts are bony, others are almost entirely lean meat, and others are marbled with fat or have borders or sections of fat. But in studies of diet it is necessary to know, approximately at least, the composition of some particular cut of beef. Some kind of a classification is needed that will take into account round steaks with only 5 per cent fat as well as rib roasts with as much as 50 per cent. To this end new figures have been derived for beef which are believed to be typical of the market grades and of the standard wholesale cuts. Bone, "visible fat," water, protein, "chemical" fat (ether extract), and ash are given in percentages and the number of calories per pound are stated. Such figures are given for chuck, flank, loin, rib, round, and other wholesale cuts from thin, medium, fat, and very fat carcasses, which correspond to common, medium, good, and choice and prime grades of beef.

Pork, mutton, and other meats, dairy products, fruits, vegetables, cereals, sugars, and all the other food materials commonly used in the United States will be studied in this same way. The results will be published as rapidly as possible for the benefit of persons "counting the calories" in their own meals or studying food problems with a view to fitting the supply to the demand and insuring a well-balanced diet for everybody.

CHARLOTTE CHATFIELD.

FOOD Habits of Farm Families Suppose you were asked how much food your family consumed last year. Could you tell? You probably could in general. Thousands of farm housewives have answered that question for the United States Department of Agriculture during the last five years. But suppose you were asked what your food is giving you

in the way of food value, whether the quantity and kind of food consumed are suitable for the health and physical development of your family, and whether you are getting the best food values for the money and time expended. Could you answer that? Probably not, for such questions can be answered only after food-consumption figures have been carefully analyzed and studied, and the work usually has to be done by someone specially trained in that field. The Bureau of Home Economics is making a study of food habits in which the figures that have been collected from the farm families are being studied to find answers to all these questions.

In this study not only the value of the food consumed by the average farm family is calculated, but also the amount of nutrients, such as energy, protein, minerals, and vitamins, in each family's food. By the use of standards for measuring the amount of each nutrient needed by the family one is then able to judge whether the food that has been consumed is adequate to promote growth in the children, to furnish energy for work and heat, and to maintain the health and well-being of each member of the family.

Almost 2,000 of these farm records have been studied for the purpose of learning two things. It was desirable to know first what the average farm family is eating. Then the diets of individual families were analyzed to see how many of them differed from the average diet. According to these records it was found that the average farm family probably consumes quite as much if not more than it actually needs. But when the food used by individual families was analyzed it was discovered that a large proportion of them do not get enough minerals, such as calcium, phosphorus, and iron, to insure the best growth and development in the children and good health in the adults. In every case this deficiency was caused by the fact that milk, fruit, and vegetables were not provided in sufficient quantities by these families.

Food from Farms

The families spent on the average in time and money about $650 per year for food and of this amount two-thirds was furnished by the farm. Since energy is the simplest measurement for comparing the food value of different foods it is used in studying food expenditures.

Of the total diet the animal foods furnished on the whole 50 per cent of the energy at 60 per cent of the cost. When a comparison of food value and cost was made of the different food groups it was found that meat, fish, and eggs furnished 16 per cent of the total energy at 28 per cent of the cost. Milk and cream made a better showing than meat, fish, and eggs. They furnished 15 per cent of the energy at only 19 per cent of the cost. Fruit and vegetables gave figures much like milk, furnishing, as they did, 13 per cent of the energy at 19 per cent of the cost. Fatty foods, cereals, and sweets, which yielded 56 per cent of the total energy of the average farm diet at only 29 per cent of the cost, are the least expensive.

Animal foods, as these figures show, are on the whole more expensive than vegetable foods. This is due especially to the high cost of meat, fish, eggs, and cheese, and the low cost of cereals and sweets. Milk, fruit, and vegetables, which are especially good sources of minerals and vitamins, furnish in addition almost twice as much

of the energy of the farm diet as do meat, fish, and eggs. Since these are the foods commonly furnished by the farm it will doubtless interest you to know that if you are consuming the average farm diet you can improve the quality of your food supply with less expenditure of time and money by furnishing for your table more milk, fruit, and vegetables and less meat, fish, and eggs. The cereals and sweets are usually purchased by the farm family. Although they are cheap sources of energy they are lacking in many of the minerals and vitamins. It is therefore safe to increase their use only when a large quantity of milk, fruit, and vegetables is also used.

EDITH HAWLEY.

FOOD Spoilage in Distribution Heavy If all of the food produced upon the farms could reach the consumer without loss from leakage, souring, rot, the attacks of rodents or insects, or just plain waste through carelessness or ignorance, the farmer's crop would increase in value and the unit price of many commodities to the consumer could be reduced. However unattainable this ideal may be as a generality, in a single commodity—sweet potatoes (The Plant Disease Reporter Supplement 45, May 1, 1926, p. 55)—losses totaling 30 per cent of the crop, or 40,000,000 bushels, in 1918, have been progressively reduced to 6.9 per cent, or roughly 5,000,000 bushels, in 1925. Not all losses are so conspicuous or so preventable, but the changes introduced by the sweet-potato grower followed lines already clearly marked out by meat packers, the citrus-fruit industry, and many other organized groups.

Spoilage for the purposes of this discussion takes two general forms, (1) the total destruction of food values, and (2) such injury to appearance, odor, taste, or texture as renders the product unsalable for human food. In the first case the entire investment may be and commonly is lost; as, for example, the rotting of ripe berries, peaches, apples, or spinach, or the freezing of potatoes in transit. In the second case, products ordinarily sold for human food may frequently be used for stock, for example, damaged flour and heated grain.

The annual reports of Federal, State, and city regulatory agencies summarize the quantities of food condemned and destroyed. These totals mount into many millions of pounds, which under proper handling would have been distributed for human consumption, while other millions of pounds are released only for animal feeding or for technical purposes. Besides the products eliminated from human use, a vast amount of material actually consumed is lowered in quality and acceptability by the same destructive agencies without having reached the stage of deterioration at which it might be condemned. It therefore becomes desirable to define the causes of the wastes encountered, the nature and extent of the loss involved in food spoilage, the dangers to health involved in the consumption of spoiled and mishandled food, and the measures necessary to cut such wastage to the minimum.

Three general groups of agencies in this wastage must be remembered: (1) Those inherent in the raw product itself, such as respiration or other metabolic changes or enzymic activities, illustrated by overripening and ultimately the complete breakdown of many products; (2) fermentation and rotting processes due to the activity of molds, yeasts, and bacteria; (3) the depredations of insects and rodents or predatory animals. These agencies need not be discussed in detail; their existence and general characters are common knowledge. Overripe fruit, soured milk, tainted meat, musty cereals, wormy fruit, and the marks of the activity of rats and mice are well known, although few appreciate the extent of the damage thus done.

Some consideration of the conditions underlying spoilage is necessary as a foundation for constructive measures to stop waste. We must at the outset admit that some or all of the agencies of destruction already listed are always present. Hence we must learn to live with them, yet reduce their toll to the minimum.

The composition of each food product is the primary factor in determining whether it is stable and easily kept and handled, or perishable and difficult to preserve. But there is no sharp line between them. Although some products may be handled easily and kept almost indefinitely with few precautions, most products make specific demands upon intelligent care for their preservation. Moisture, temperature, and time are the three major factors in spoilage. These factors, together with the initial composition of a product, largely determine the demands of that product upon our handling facilities and upon the knowledge and skill of the handler.

Moisture in All Food

Moisture is present to some degree in practically all food, ranging from a fraction of 1 per cent in a sample of granulated sugar to 90 per cent and more in ripe fruits like the strawberry. The sugar is staple, but only so long as it is kept dry. The fruit is perishable at best and can only be carried in sound condition to a distant market by the exercise of the greatest skill in packing and in refrigeration and the utmost promptness in shipment. Between these extreme cases there is every gradation of stability and instability, in which water at varying concentrations in the kind and quantity of the nutrient present sets a limit upon our selection of handling practices. In the stable groups of products—grains, manufactured cereal products, and dried, brined, or sweetened foods—there is, product by product, a concentration of nutrients at which the internal activities of the product itself are minimized and the attack of microorganisms from without is reduced or stopped. From such critical concentrations only a slight increase in water content will often permit spoilage agencies to become active. Flour becomes musty, corn meal will sour and become lumpy, preserves ferment or "work," pickles become slippery and soften, dried apples get moldy, if, all other conditions remaining the same, just a little too much water is added in manufacture.

Water does not act alone. A product will keep in cold weather at a water content at which it will spoil promptly in warm weather.

Decomposition and fermentation seem to stop entirely only when every particle is frozen, but practically very little spoilage occurs at temperatures near the freezing point of water. These same processes are retarded, not stopped, in the cool storage of the household refrigerator or of the cellar. They are useful to carry food from one day to another, but inefficient with perishables when long storage is demanded.

Time thus enters as the third great factor in spoilage. A few products kept from water and from vermin remain unchanged for, perhaps, indefinite periods. Most of our foodstuffs deteriorate with age, no matter what our precautions may be. Some may remain upon the shelf for years without offensive change; some can be kept frozen with little or slow deterioration; but for the larger number we must use all the apparatus and all of the skill available, and yet, to have high quality they must be consumed within a reasonable storage period.

Where to Improve Methods of Handling

If we disregard the problem of the large market and the long shipping line, for which expert service is usually constantly available, the local store, the home, and the farm represent points at which improvement in food handling is imperative.

In the local store all kinds of products, from the most stable to the very perishable, are brought together under one roof and frequently in one room with inefficient and often ill-trained help. Common sense and human experience go a long way in the efficient handling of many of these products, but with a multiplicity of new and untried foods, some of them experimental even to the manufacturer, the storekeeper's experience as a guide to practices breaks down at many points. Urged on by the representations of the distributor on the one side and the demands of the consumer on the other, these stores constantly carry numerous products in which the losses to the seller are excessive and the conditions of the product delivered to the consumer's household often very unsatisfactory. Vegetables eaten fresh may be discussed as illustrating this general problem.

Keep Fruit and Vegetables Under Refrigeration

The inclusion of green vegetables in every dietary recommended has brought lettuce, celery, spinach, and many related forms to all our markets throughout the year. During a large part of the year, however, these products must be shipped for long distances, involving transportation dangers, delays, and changes in temperature and humidity, thus adding greatly to the exposures. As a result, many shipments become a total loss and others are partially spoiled. The unit price to the consumer must cover not only the cost at the point of production and the distributing cost, but the spoilage as well.

Experiments have shown, however, that the simple expedient of chilling these products thoroughly, while dry, and packing them in that condition for shipment will slow down the activities of the vegetables until they are practically negligible and largely stop bacterial multiplication during a reasonable market period. Supported by cool weather or ordinary refrigeration en route and at the selling

point, it is possible to reduce greatly the spoilage in this series of products. Even more important, however, is the improvement in quality which makes the vegetables attractive instead of scarcely edible. Yet the improvements proposed would demand radical changes in the provisions for handling commonly found all the way from the producer to the retailer. Such changes follow the pressure of public demand for products not merely edible in the sense of being tolerable, but high in quality, a demand which is supported by evidence that the saving and improved prices obtained will actually more than cover the added expense.

Increased provision for the control of temperature and humidity in the market stall and retail store is clearly demanded in the interest not only of economy but of the added safety of the foodstuffs which, if properly handled, could be made to reach the consumer in clean, crisp, sound condition. Protection against flies, rodents, and animal and human contaminations would be incidental to proper care against decomposition, but would be an inestimable gain in the battle against the spread of enteric diseases through mishandled food. The conditions in the local store are intensified when food is transferred to the home, and here again better provision for safe handling and better knowledge of safe limits in handling are needed.

Take the single factor of temperature control. Some type of refrigeration in every home is an ideal to be promoted in every way possible. Nevertheless, it is recognized that there are great sections of our country in which ice or artificial cold storage has been thus far physically or economically impossible for the people upon farms and for many of those in villages. In many of these areas cellars which make cool storage possible are practical and widely used. In others supplies of cold water are available. Although they materially improve the situation, they are often inefficiently used.

Again, the many types of "iceless refrigerators" which utilize the cooling power of evaporating water are found to be useful and to be within the economic reach of all who will take the time and trouble to make them from plans freely in reach of all and materials already in every home. Nevertheless, a great many houses lack any provision for the proper control of temperature during the hotter part of the year. In a great many more homes there is need of more systematic care to preserve food under the best conditions available and to cut down the very high percentages of loss which are to be seen on every hand. For them the procedure to be recommended depends upon the source of the perishable food. If the supply comes from the home garden, only so much as can be quickly consumed should be cooked for the table. There should be little left over, and that should ordinarily be consumed within the next two meals or recooked if held to the end of a 24-hour period. The excess produced may be sold if a market is in reach. Otherwise proper home canning or drying of all material in prime condition from day to day will keep the excess for a season of shortage.

Test of Fitness of Food

The test of fitness for use should not be the ability of the consumer "to get food past his nose," but "is it right?" Not merely is food so filthy or so decomposed as to be dangerous, but is it fresh,

sound, and clean? The cooperation of producers, shippers, transportation agencies, and all distributors is necessary to get food fit for consumption to the consumer's household. The safety and satisfaction of the ultimate consumer rests finally upon the ideals of cleanliness and soundness held by the one who actually prepares that food for human use.

CHARLES THOM.

FOOT-and-Mouth Disease in the United States The highly contagious malady, foot-and-mouth disease, exists in most of the countries of the world. In many of them it has gained such a foothold that no attempt is made to eradicate it. In view of the close trade relations that exist between the United States and countries where foot-and-mouth disease is prevalent, the danger is ever present that infection may be introduced and, unless promptly recognized and effectively combated, become permanently established.

Foot-and-mouth disease has appeared in the United States on eight different occasions—1870, 1880, 1884, 1902, 1908, 1914, and twice in 1924. All these outbreaks were stamped out; some quickly, others only after long and expensive campaigns. The cost of eradication work for all outbreaks was approximately $20,000,000, divided about equally between the Federal Government and the States involved. By far the largest item of expense was payment made to livestock producers for animals and property destroyed. In eradicating these outbreaks more than 342,000 cattle, sheep, swine, and other cloven-hoofed animals were slaughtered. But even after allowing for the indemnity payments, losses estimated at more than $150,000,000 were sustained by stock owners and others directly and indirectly affected.

Stringent measures are being used to guard against further misfortunes of this kind. The importation of domestic ruminants and swine from infected countries is prohibited entirely. Such animals originating in countries free from the disease are detained in quarantine stations at ports of entry under close veterinary supervision until it is considered safe to release them. Vessels from foot-and-mouth disease infected countries with live animals aboard to supply the meat requirements of their crews are prohibited entrance into our harbors.

Hides, skins, fertilizers, animal feeds, and a great variety of other products derived from animals or intended for feeding purposes, which are considered likely to serve as carriers of the infection, are either excluded entirely or are admitted subject to disinfection or such other treatment as may be necessary to destroy any lurking germs. Hay or straw packing material from infected countries, unless accompanied by a satisfactory certificate of disinfection, is burned under official supervision.

The use of substitute packing materials, such as excelsior or paper, as advocated by the department, is becoming quite general, and at the present time less than 5 per cent of the shipments arriving in this country are packed in hay or straw, subject to restrictions. The disinfection of previously used bags and bagging material of foreign origin which might find their way to farms is another requirement designed to afford protection to our farming interests. Plants have

been constructed for this purpose at ports of entry, equipped with steel chambers, in which the material is subjected to heat at a temperature sufficiently high to destroy the infection.

Preparedness

A vast foreign commerce and rapid means of transportation make the task of repelling foot-and-mouth disease a most difficult one. It is probable, therefore, that in spite of all reasonable and practicable precautions that can be taken to keep out infection it will at some time be reintroduced.

In preparation for future outbreaks the Bureau of Animal Industry of the department has given special attention to a study of foot-and-mouth disease control and eradication under various conditions. Based on this study and on its experience in past outbreaks the bureau has formulated a comprehensive plan of procedure which

FIG. 97.—Cattle infected with foot-and-mouth disease slaughtered and prepared for incineration. Disposal by burning is rapid and a very effective means of checking the spread of the disease, though this method is most suitable for small herds

has been submitted to the State livestock sanitary officials and approved. This plan covers every phase of work in the field and provides definite methods of cooperation between the Federal and State authorities.

The bureau maintains a force of trained veterinarians and other inspectors who have had experience in previous outbreaks. This entire force is prepared to proceed to the scene of action on telegraphic orders. Its organization is somewhat similar to that of an army, with its supervisory officers selected in advance for important posts. It is made up of units each one of which handles a particular line of work, such as inspections, appraisals, trench digging, slaughter, disinfection, car cleaning, and shipments.

Owing to the extreme contagiousness of foot-and-mouth disease and the rapidity with which it spreads, the immediate slaughter and proper disposal of infected animals stand out as the most essential elements in prompt eradication. In earlier outbreaks great difficulty was experienced frequently in preventing the spread of infec-

tion while diseased animals were above ground awaiting slaughter and burial. During the recent Texas outbreak, however, the problem of holding infection in check and providing sufficient trench space for infected herds was largely solved through the use of steam shovels and oil-burning machines. The latter machines operate somewhat on the principle of a blowtorch. They are light enough to be placed on a truck, and thus can be moved rapidly where needed. A herd of a few animals in which infection manifests itself, after being slaughtered, can be burned within a few hours through the use of one of these machines. Where large herds, especially of range cattle, are involved, the actually diseased animals can be slaughtered and immediately incinerated, thus retarding the spread of infection through the herd until the steam shovels have had time

FIG. 98.—When large numbers of cattle are involved, disposal by slaughter, quicklime, and deep burial has proved to be a certain means of checking the spread of this highly contagious foreign malady. The picture shows one of the largest trenches in the 1924 outbreak in California

to arrive and prepare trenches for the burial of the remaining animals. These machines and other apparatus adapted to this work in recent outbreaks will be of material assistance in case of future need.

Cooperation of Farmers Essential

Despite the scope of eradication measures and the diligence with which they are applied, success in combating an outbreak of foot-and-mouth disease can not be attained without cooperation of the farmers and business interests of the community involved. This is especially true as it relates to farmers, who are the ones chiefly affected.

Posters placed throughout the quarantined area depict the symptoms of foot-and-mouth disease. The prompt discovery of a center of infection is a matter of the utmost importance. Farmers, therefore, can render a valuable service by immediately reporting suspicious cases in their herds or locality. Stock owners, through curiosity, have been known to visit neighboring quarantined

premises and carry infection back to their own herds. Conscientious compliance with the provisions of a quarantine—the requirements of which are never more stringent than absolutely necessary to afford adequate protection to the interests of all concerned—will tend to guard against such a situation.

Although it is the duty of all to aid in the enforcement of quarantine orders, there will be misguided individuals in every outbreak who, through ignorance of the true nature of the disease or for other reasons, will oppose the slaughter of animals. This country has used the slaughter method of eradication with unfailing success. In various foreign countries, especially in Europe, where attempts have been made to combat the disease by methods of quarantine and treat-

FIG. 99.—Inspecting a steer for foot-and-mouth disease on the range. Official field forces engaged in the work must have men qualified as riders and ropers, in addition to expert diagnosticians and veterinarians

ment, it has invariably become so firmly established that the slaughter method no longer is feasible. The losses in such countries are heavy and continuous. A Federal scientific commission which returned to the United States in 1926, after more than a year's study of foot-and-mouth disease on farms and in the laboratories of European countries, gives unqualified approval to the slaughter method.

Farmers can cooperate by informing themselves and by encouraging others to become familiar with the true and serious character of foot-and-mouth disease and the great expense and handicap to the livestock industry in countries where the disease has passed beyond the stage where it is possible to eradicate it. They can be especially helpful in using their influence against ill-advised movements to temporize with an outbreak and in opposing the issuance of court injunctions which tie the hands of officials who are fighting the disease and which tend to bring on the locality and State destructive embargoes by neighboring States. Farmers, through their organizations, may also serve a helpful purpose by assisting in any movement to obtain suitable State legislation which will place the State in a condition of preparedness to meet an outbreak of the disease.

A. W. MILLER.

FROST Forecasting Indispensable in Orchard Heating Through extensive experimental work and actual practice in orchard heating in the Pacific Coast States, it has been determined that fruit in that section of the country can be successfully protected against injury by frost under practically any conditions of temperature that are likely to occur during the critical period of growth. The success of orchard heating, however, depends very largely on the careful and painstaking manner in which the work is performed and the adequacy of the equipment used. As an aid in this work, and in cooperation with fruit growers, the Weather Bureau maintains a corps of frost specialists during the danger period in both the citrus and deciduous fruit-growing sections of the far Western States.

The service performed by these specialists is of a twofold nature—making temperature surveys and forecasting the occurrence of temperatures low enough to require artificial heat in the orchards. The practice of orchard heating has become very extensive in recent years, nearly a million new heaters having been purchased by the citrus growers of California alone during the years from 1922 to 1925.

It is well known that local topography plays a very important part in the frost hazard of an orchard, especially on clear, calm nights, when by reason of radiation of heat from the ground the surface layers of air become considerably colder than those at some distance above and a down-slope drainage of the relatively cold surface air occurs. This results in an accumulation of dense, cold air in the near-by lower lands or depressions and makes the frost hazard greater than on the higher slopes. It often happens that very small variations in elevation and slope make a marked difference in the frost hazard at near-by points.

By reason of variations in topography some of the more favored localities of a region may require little or no protection, while in others near by heavy firing may be required to prevent loss or serious injury to the orchard or grove. It is important, whenever new plantings are to be made, to locate and chart these cold areas, so that advantage may be taken of the local differences in topography. The temperature-survey work of the Weather Bureau consists in the establishment of many temperature stations, usually 30 or 40, in a relatively small area, equipped with standard thermometers and thermographs properly exposed and operated by trained men. From the record of these the relative frost hazard of different places within an area is determined and the information made available to growers as a guide, both for future plantings and in the matter of distribution of equipment for protecting existing orchards.

Advance Preparations Required

Wherever orchard heating is practiced, advanced preparations, such as the placing of oil-filled heaters in the orchard, the convenient storing of a reserve supply of fuel, and many other preliminaries, are made before the frost-danger period arrives, so that when it becomes necessary, heating operations may be started on very short notice. When a frosty night impends, however, it is very necessary to know this during the afternoon of the preceding day, so that last-

minute details, such as getting help for lighting heaters, final preparations for lighting, instructions to workers, etc., may be arranged in readiness for the coming battle against "Jack Frost."

The margin between the "danger" and "no danger" temperature is very narrow and the descending mercury in the thermometer often approaches the danger mark without actually reaching it. In such cases, in the absence of dependable information as to just what is going to happen, growers often make unnecessary final preparations for, and actually begin, heating operations at considerable expense.

A system of special frost forecasting by experts of the Weather Bureau has been developed through which growers are advised very definitely as to just what degree of cold to expect during the ensuing night. When it is known that the temperature will remain well above the danger point, a forecast of "no danger" is made, but whenever freezing or lower is expected at any place in the district that fact is made known, together with a very definite statement as to the minimum temperature expected at a "key" station located at some cold place in the area. The forecaster advises as to what parts of the district will need protection and whether or not heavy firing will be required. These facts are widely distributed by telephone to the headquarters of the various fruit organizations for dissemination to individual members, published in the afternoon papers, and put on the air daily through the radio.

Confidence Gained from Results

The accuracy with which forecasts have been made for several years have given the growers complete confidence in them as a dependable basis for final preparations for firing operations. As previously stated, definite forecasts are made when the temperature is expected to go as low as 32° F. at any station in the district. Although this is not a damaging temperature, when it falls to freezing there is usually uneasiness on the part of the growers as to just how much lower it may go, and definite information is desired.

J. B. Kincer.

Foreign Trade Index Number for Foodstuffs

By net foreign trade is meant the excess of exports over imports or the reverse. The index number of net foreign trade in foodstuffs is an attempt to measure the fluctuation in the net contribution of the United States to the food supply of all other countries. To this end imports of foodstuffs, each commodity with an assumed fixed weight, are deducted from exports and the difference in each year expressed in relation to the average excess of exports over imports in the five years ended June 30, 1914.

The weights assumed for the purposes of this index number are the average unit prices of various food products in the base period. By multiplying the volume of exports in each year by these fixed weights abstract aggregates are obtained which can be added together or subtracted one from another. But since the weights remain constant the fluctuations in the aggregates from year to year represent changes in volume of trade. The index number obtained by this method is an index number of the difference in volume between

exports and imports. A higher index number in any year may result either from an increase in exports or from a decrease in imports or both, while a lower index number indicates either a decline in exports or an increase in imports or both.

In the computations 57 commodities were taken into account covering all the more important vegetable and animal-food products. Cacao was included, but coffee and tea excluded as having no appreciable food value. On the side of exports, in recent years pork products and wheat, including flour, are the most important items, while on the side of imports, sugar far outweighs all other items, with cacao second in importance.

In addition to the index number of trade in all foodstuffs, group index numbers were computed of trade in animal products, grain and grain products, sugar, and of fruits, nuts, and vegetables. These index numbers for the years ended June 30, 1880–1926 are presented in Table 10.

TABLE 10.—*Index numbers of net foreign trade in foodstuffs, 1880–1926*

Year ended June 30	All foodstuffs, net exports	Animal products, net exports	Grains and grain products, net exports	Sugar, net imports	Fruits, nuts, and vegetables, net imports
Average 1910–1914	100	100	100	100	100
1880	355	167	185	43	29
1881	358	169	185	47	20
1882	187	110	109	48	55
1883	187	88	130	52	42
1884	178	112	109	66	45
1885	208	113	127	61	32
1886	175	111	102	62	38
1887	199	111	135	72	48
1888	154	108	99	65	66
1889	177	122	97	67	38
1890	288	186	136	70	53
1891	225	188	95	82	68
1892	320	138	219	85	38
1893	263	151	172	90	73
1894	264	165	164	103	53
1895	[illegible]	162	125	85	49
1896	279	173	157	92	45
1897	375	202	224	116	30
1898	526	210	307	62	39
1899	488	234	275	93	40
1900	482	229	277	94	43
1901	488	223	282	93	30
1902	376	201	204	72	68
1903	407	165	204	101	42
1904	282	200	129	87	48
1905	232	200	86	87	51
1906	342	235	158	93	69
1907	297	202	160	104	67
1908	284	184	153	80	80
1909	153	144	105	99	112
1910	95	100	85	93	86
1911	115	111	87	86	88
1912	95	123	77	95	120
1913	165	102	150	106	72
1914	34	68	102	119	134
1915	359	112	322	116	90
1916	378	179	252	94	86
1917	317	193	216	96	171
1918	270	234	166	104	241
1919	524	338	288	113	238
1920	297	209	226	147	178
1921	331	146	315	151	159
1922	365	171	338	153	207
1923	238	171	256	179	230
1924	133	177	135	176	171
1925	172	138	237	198	201
1926	(1)	105	117	199	222

[1] Import aggregate in excess of export aggregate. The index number expressed as a negative.

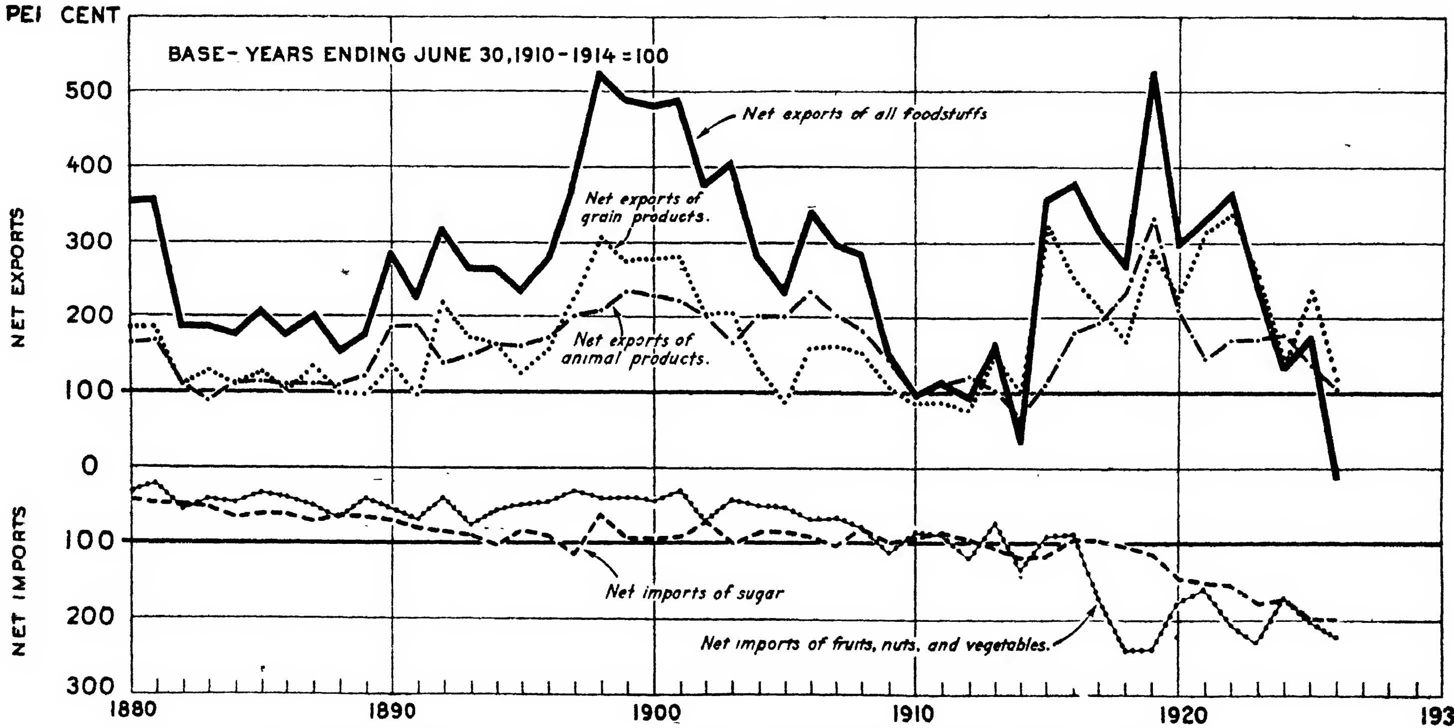

FIG. 100.—Index numbers of net foreign trade in foodstuffs for years ended June 30, 1880–1926

It will be noted that the excess of exports over imports of all foodstuffs and of the meat products and grain products groups increased rapidly from 1888 to 1898 with the rapid development of agriculture and transportation facilities in the Great Plains. But from 1898 to the outbreak of the World War net imports showed a distinct downward tendency, owing to increase in population in the United States, increasing competition in foreign markets and higher standards of living in the United States which increased the demand for foreign food products.

The war emergency brought net exports back to the 1898 figure, but since 1919 the decline is again apparent and in the year ended June 30, 1926, the import aggregate exceeded the export aggregate making the index number of exports of all foodstuffs less than zero. On the import side there has been a remarkably constant increase during the whole period of 46 years. In Figure 100 the index numbers of net exports are plotted on a natural scale while those of net imports are shown below on an inverted scale.

G. B. L. Arner.

FOREST Grazing Control Aids Tree Growth

In timber growing as in farming one can not expect good yields unless the land is well stocked with the right kind of plants. It is just as important to have a good "stand" in a forest as in a cornfield, and more so, because the trees must grow close together in order to produce straight, clear stems suitable for lumber. Most of the forests in this country are bearing less than half the timber they could support because they are understocked.

The reasons for poor stocking are not difficult to find. Old trees are continually falling victims to wind, lightning, fire, disease, and insects. Under normal conditions nature quickly replants the spaces thus left vacant; but outside agencies may interfere with this natural replacement, and then we have treeless openings within the forest. Fire has been the most common agency in preventing the restocking of these openings. A surface fire once in 20 years, even though not severe enough to kill many large trees, may destroy the young growth.

Grazing and Fire Hazards

The grazing of domestic livestock has also been a factor. To some extent grazing has probably decreased the intensity of fires, but on the other hand it has been a cause of fires being set, as in "light burning." In the Southwest livestock has been a direct factor in perpetuating openings by eating seedlings.

It is quite generally known that livestock browse the shoots of broad-leaf trees, but the general impression is that they do not disturb conifers, such as pine, fir, and spruce. Fortunately this seems to be the case in some regions; nevertheless, much damage to conifers is taking place. In Arizona it has been known for more than 20 years that grazing is seriously interfering with reproduction of western yellow pine.

Prolonged investigations leave no doubt that if the kind of grazing carried on in the past should continue natural reproduction will be stopped in more than half of the great yellow-pine forest of the

Colorado Plateau. Information from other parts of the country indicates that there is more or less of a grazing problem also in Washington, Oregon, California, Idaho, Colorado, the Lake States, New England, the Appalachian region, and the southern pine belt.

Damage from Overgrazing

Overgrazing is the most common cause of damage to tree seedlings. It does not always follow, however, that if overgrazing is avoided no damage will take place. Livestock exhibit well-defined preferences in selecting food. Generally they take what they like best first, and only when there is not enough of this to go around do they consume fully the less palatable forage. Contrary to the usual impression, tree seedlings, even the pitchy pines and firs, are not unsavory to livestock. In the Southwest only the junipers enjoy immunity from cattle and sheep, and even they are eaten by deer. Western yellow pine, white fir, and Douglas fir apparently are more palatable to sheep than many of the grasses.

In regions where most of the forage plants are relished more than tree seedlings, the latter are likely to escape unless the more desirable feed runs short. The same rule should hold in regions where only a small proportion of the forage is more palatable than the seedlings, but there the margin of safety is so narrow that it is easily overstepped. Moreover, the appetite for seedlings seems to vary greatly under apparently constant forage conditions. It is not uncommon in Arizona to find pine and fir seedlings defoliated when such choice feed as grama grass (*Bouteloua gracilis*) is scarcely touched. Sheep, especially, seem to crave a certain amount of "browse" which, in the absence of more palatable woody plants, is supplied by coniferous trees.

The effect of grazing is also greatly influenced by the density and rate of growth of the tree seedlings. If seedlings start in large numbers and grow rapidly a considerable amount of injury might be sustained without serious consequences. With a stand of 50,000 young seedlings per acre, the chances that 2,000 may survive are better than if the initial stand is only 5,000. If seedlings make an average annual height growth of 6 inches during the first 10 years, more are likely to get beyond the reach of livestock than if the growth is only 2 inches a year.

Difficult to Lay Down Rules

Differences in forage conditions, in the vigor of forest reproduction, and in the food habits of animals make it difficult to formulate practical rules for avoiding damage. Very often the avoidance of overgrazing will solve the problem. It should be borne in mind, however, that an area as a whole may not have too many animals on it, and yet local areas where stock tend to congregate may be seriously overgrazed. In any case, it is necessary to be on the alert for signs of damage. To save a stand of seedlings requires action in the early stages before they become exterminated in patches and may call either for complete exclusion of grazing or for exclusion or reduction in numbers of certain kinds of stock.

The extent to which grazing should be restricted in order to promote forest regrowth depends not only upon the condition in

the forest but upon such circumstances as the desire of the owner and the relative returns from the forest and forage crop. In the case of the national forests the owner, who is the public, desires to devote the land primarily to timber growing. Moreover, the true timber lands on the national forests are better adapted to growing timber than forage. In the Southwest, where grazing in the forests presents a particularly acute problem, it has been ascertained that the annual growth of timber on fairly well forested pine land is worth about fifteen times as much as stockmen are paying for the grazing privileges.

This does not mean that grazing should invariably be prohibited, but rather that it should be so managed as not to interfere with forest reproduction. Fortunately, there are some regions in which reproduction will succeed with moderate grazing. In many places it will be necessary to exclude sheep and goats, and permit cattle grazing, if at all, only under rigid restrictions.

Obstacles to Quick Adjustments

In some cases it may be difficult to make the necessary adjustments in grazing as promptly as desirable. Private owners whose timber is not marketable may be sorely in need of the income which may be derived from grazing. In Government or State-owned forests it often happens that communities in remote localities where the timber can not be exploited are dependent upon the grazing industry. Under such conditions timber growing may be called upon to yield temporarily in favor of grazing. Where the land is known to be permanently more valuable for timber than for forage crops, however, timber growing should not thus be set aside without adequate provisions for restoring it to its rightful place. In making the grazing adjustments needed to safeguard forest reproduction it should be understood that if an area has been overgrazed a reduction to what may be considered proper grazing from the standpoint of forage will not result in loss of grazing revenue but, on the contrary, will increase it.

The forest owner, be he the Government, State, or individual, should determine the relative value of the timber and the stock business on his land. He should also consider indirect forest values such as recreation and water resources. If greater returns can be realized from growing timber than from growing livestock, he will see the wisdom of not allowing grazing permanently to jeopardize regeneration of the forest.

G. A. Pearson.

FOREST Trees for Planting Farmers who plant young forest trees on the waste rough parts of their land are joining in a very popular movement to increase farm values. In the year ended June 30, 1926, State forest nurseries distributed over 25,000,000 little trees to farmers. These trees were distributed by 32 States and 1 Territory, a remarkable increase over the year ended June 30, 1925, when there were not over 20 State forest nurseries in the country. At the rate of 1,000 trees to

the acre, 25,000 acres of idle farm land were put to work growing a profitable crop.

Forest-planting stock distributed by the States generally ranges in price from $1 to $10 per thousand, a higher price being sometimes charged for the larger stock. In some States no charge is made for the trees distributed.

List of Sources

The following list gives names of State organizations from which young trees can be obtained, together with figures on price and number distributed last year.

California, State forester, Sacramento: 1,090 Arizona cypress, eucalyptus, and other hardwoods at 10 to 50 cents each.

Colorado, State forester, Fort Collins: 110,000 (information incomplete).

Connecticut, forester, Agricultural Experiment Station, New Haven: 423,000 red pine, white pine, Norway and white spruce, and others at $4.25 to $12 per thousand.

Delaware, secretary, State Board of Agriculture, Dover: 10,000 tulip poplar, black locust, white oak, and black walnut. No charge.

Idaho, professor of forestry, University of Idaho, Moscow: 82,500 black locust, willow and poplar, western yellow pine, and others at $1 to $4 per thousand.

Indiana, State forester, Indianapolis: 127,200 locust, white oak, white pine, and others at $5 to $10 per thousand.

Iowa, professor of forestry, Iowa State College, Ames: 30,200 Carolina poplar, white pine, black locust, and others. No charge, except for packing and shipping.

Kansas, State forester, Manhattan: 27,750 Osage orange, arbor vitae, elm, and others at 5 to 50 cents per tree.

Kentucky, State forester, Frankfort: 12,400 chestnut oak, black walnut, and tulip poplar at one-half to 1 cent each.

Louisiana, superintendent of forestry, New Orleans: 89,000 slash and loblolly pine, black locust, and catalpa. No charge, except for shipping.

Maine, State forester, Augusta: 672,000 white and red pine at $10 per thousand.

Maryland, State forester, Baltimore: 226,400 loblolly pine, red pine, Norway spruce, and others at one-fourth to 15 cents each.

Massachusetts, State forester, Boston: 965,500 white pine, Norway spruce, and others at $7.50 to $10 per thousand.

Michigan, professor of forestry, Michigan State College, East Lansing: 308,600 Norway spruce, white and jack pine, and others at $2 to $16 per thousand.

Minnesota, commissioner of forestry, St. Paul: 43,000 Norway pine, white spruce, white elm, and others at $10 per thousand.

Nebraska, State forester, Lincoln: 33,900 jack pine, elm, Scotch pine, and others. No charge for jack pine; 1 to 8 cents per tree for others.

New Hampshire, State forester, Concord: 453,750 white and red pine, white spruce, and others, at $3.50 to $7.50 per thousand.

New Jersey, State forester, Trenton: 592,000 red and Scotch pine, Norway spruce, and Douglas fir, at $4 to $6 per thousand.

New York, superintendent State forests, Albany: 9,300,000 white pine, Norway and white spruce, and others, at $1 to $5 per thousand.

Ohio, State forester, Wooster: 1,154,700 Norway spruce, Scotch pine, black locust, and others, at $1.50 to $8 per thousand.

Pennsylvania, secretary, department of forests and waters, Harrisburg: 8,967,300 white, Scotch, and red pine, Norway spruce, and others. No charge except for packing.

Porto Rico, Insular forester, Rio Piedras: 343,000. No charge.

Vermont, commissioner of forestry, Montpelier: 914,500 Norway spruce, white, Scotch, and red pine, and others, at $6.50 to $7 per thousand.

Virginia, State forester, University: 44,000 loblolly, white, Scotch, and shortleaf pine, at $1 to $10 per thousand.

Washington, department of forestry, College of Agriculture, Pullman: 2,360 black locust, Norway maple, and others, at 10 to 40 cents per tree.

Wisconsin, superintendent of State forests and parks, Madison: 227,175 white, Norway, and Scotch pine, and others, at $4 to $10 per thousand.

Clarke-McNary Act is Authority

The foregoing distribution of trees by the States last year was made in cooperation with the United States Forest Service under Clarke-McNary Act agreements. In addition to this distribution of 25,133,000 trees to farmers, the cooperating State agencies in the fiscal year 1926 distributed 13,541,000 to other planters and furnished 13,994,000 for planting on State lands—a total distribution of 52,668,000.

Why should farmers plant trees?

They set idle acres, too rough or sterile for farming, to work growing an always marketable crop. Though trees take a number of years to reach maturity, a young plantation adds cash value to a farm, just as a young orchard does. In a few years it yields small material in the form of thinnings, such as poles and fence posts; later, fuel and pulp wood; and finally, tie and saw timber. It is a savings bank that pays compound interest. Timber growing is a necessary part of diversified farming, affording employment and wages for winter work. A farm wood lot is security to the banker and the farm loan board.

ALFRED B. HASTINGS.

FREIGHT Rates Since War Period In the general readjustment following the war, freight rates on farm products have been stabilized considerably above their 1913 average. They are about at the same level as prices of nonagricultural commodities, but, as shown in Figure 98, somewhat above farm prices. The result is that the farmer's freight bill has been out of line with the prices he has received and freight rates have added an additional item to his burden.

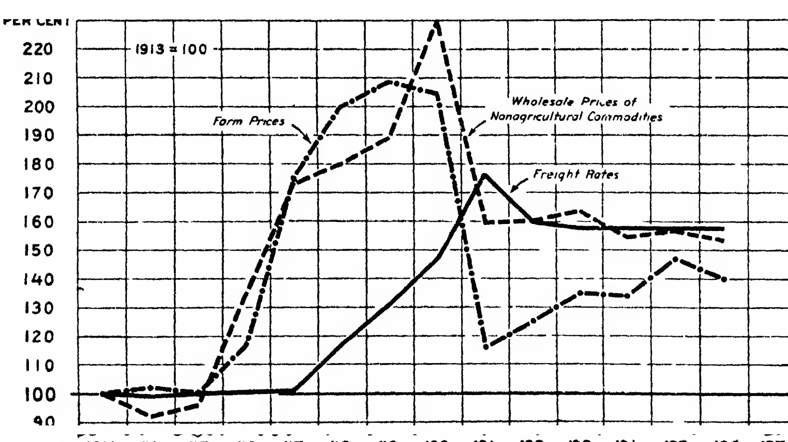

FIG. 101.—Comparison of freight rates, farm prices, and wholesale prices of nonagricultural commodities, 1913–1926

Generally, freight rates do not go up or down until some time after prices and costs have risen or fallen. There was no material increase in freight rates during the war until 1918 and again in 1920. At this later date, 1920, all rates were increased from 25 to 40 per cent. About the same time farm prices began a precipitous decline, reaching their low point in 1921. As shown in the chart, the result of this increase was that freight rates were at their highest the same time that prices were at their lowest.

An example of the effect of this may be seen in the case of wheat. In 1919, when the North Dakota farmer was receiving around $2.25 a bushel for his wheat, his average freight cost to Minneapolis was 5 per cent of the price. In 1921, when the price reached a low point of 84 cents, the freight cost was 18 per cent of the price. The same situation where freight rates were an excessive burden was true of other farm products and of nonagricultural commodities as well. Since this low point, however, when the burden of high costs was the heaviest, farm prices have gradually risen and in 1922 there was a 10 per cent reduction in freight rates.

Farm prices and freight rates on agricultural commodities are still out of line. At the present time freight rates have stabilized at 158 per cent of their pre-war level or in line with the price level of nonagricultural commodities, while prices are 10 to 15 per cent lower.

B. R. Gould.

FRUIT - Tree Stocks Are Improving The stocks which make the root system of budded and grafted trees have received more attention in recent years than formerly, although our knowledge of the underground part of such trees and the important part it bears in the trees' well-being is still far less than what we know of varieties and many other factors in fruit production. Evidence clearly indicates that some improvement in the performance of orchard trees may be had by better choice of stocks.

The interest of nurserymen, growers, and scientists has brought about a great deal of experimental work which is now beginning to yield results. Much time and energy must still be expended on such experiments, however, before the choice of the most suitable stocks can be made with the certainty of results now obtainable in the choice of the best adapted varieties.

At present a large proportion of the seed for the domestic production of fruit-tree stocks is imported. The seedlings themselves are also imported in large quantities. Aside from the danger of introducing insects and diseases, the behavior of imported seeds and seedlings has often proved unsatisfactory by reason of poor germination of the seeds or in variability of the seedlings. A search for domestic seed of good quality has shown that resources not hitherto utilized are already available for some of the important fruit stocks, while others can be produced without difficulty in a few years' time by growing trees for the purpose.

For apple stocks, French crab seedlings have been most largely used for many years. Seed from some of the widely grown varieties

of apples appear to possess superiority over French crab, according to experiments by the United States Department of Agriculture which have been under way for the past five years. Many of these varieties supply seed that germinates well and the resulting seedlings are vigorous and make good unions when budded or grafted. Seedlings of several varieties are hardier than French crab. Among them are McIntosh, Tolman Sweet, Oldenburg (Duchess), Rhode Island Greening, and Fameuse. Seedlings of other varieties which give evidence of desirability except in the northern sections, are Delicious, Winesap, and Stayman Winesap. Seeds of all these are available in large quantities from cider pomace in sections where the varieties are grown commercially.

Cherry Stocks from Europe

Mazzard and Mahaleb, the two principal cherry stocks, are at present mainly imported from Europe. Mazzard cherry seed from the roadside and pasture trees of Pennsylvania, Maryland, and Virginia within the past two or three years has been found superior to the imported seed. These wild trees are the descendants of the sweet cherries brought from Europe in colonial days. They have undergone vigorous selection under the severe conditions in which they grow in the wild. These wild trees occur over a wide range and are sufficiently productive to assure an ample supply of seed every year.

For Mahaleb cherry seedlings which are used in greater numbers than any other cherry stock, no adequate supply of seed is available in this country at present. Uncertain germination of imported seed has been one of the drawbacks to the production of seedlings in this country. On the other hand, seed from trees locally grown and handled to prevent severe drying during the interval between collecting and planting gives reliable germination. As Mahaleb trees come into bearing at an early age and are productive, no reason is apparent why a domestic supply of this species should not be grown for its seed.

A form of Morello cherry used in northern Illinois in a limited way for many years has recently received more attention on account of the excellent performance of the trees worked on it. It is a dwarfing stock propagated by suckers.

Myrobalan plum seedlings vary widely in their characteristics. Improvement in the quality of this most widely used plum stock is being brought about by selecting forms that produce the most desirable type of seedlings and growing these selections in orchards for their seed. In California a considerable proportion of the Myrobalan seed annually needed for the entire country is already available, and the supply is increasing.

Experiments are also being directed to another promising means of improvement in fruit-tree stocks by eliminating the variability recognized in nearly all seedlings. Individuals are sought that have outstanding superiority in such qualities as affinity for the varieties to be worked on them, hardiness, adaptability to a wide range of conditions, and resistance to insects and diseases. These selected individuals are propagated by cuttings or layers rather than by seed, thus reproducing their characteristics with uniformity. Such means of obtaining stocks is a departure from established nursery practice

in the United States, seedlings nearly always being used except for dwarf apple and pear stocks. It is not a new idea, however, for in Europe it is very widely used.

Problems of Propagation

Besides the selection and proving of individuals, the problem of inexpensive and rapid propagation is an important one. Most types of fruit stocks do not root easily from stem cuttings. Root cuttings, however, make plants readily in some cases, while in others layers are better. Stocks thus propagated necessarily cost more than seedlings, but this added cost of a few cents per tree would be more than justified if a better tree could be had by their use. Several apple, cherry, and plum selections already made give promise of exceptional merit and are now being propagated for further tests before introducing them.

Of the plants used for the adornment of home surroundings, the Japanese flowering cherries are being more generally planted as they become known. These are most frequently worked on Mazzard as being the most readily available stock. The trees, however, have often proved short-lived. Several oriental species and forms more closely related to the varieties appear more suitable. Among those that show special promise are *Prunus serrulata* and its form, *P. serrulata sachelinensis* and seedlings of the variety Yoshino.

Several stocks for hybrid tea roses that give evidence of merit are being tested in comparison with the stocks generally used, which are manetti, Japanese multiflora, and others. One of these is a form of *Rosa multiflora* introduced from China by Chenault and received by the department from the Arnold Arboretum. Besides having the desirable qualities of the Japanese multiflora, this form is even more vigorous and has larger canes which root easily as hardened cuttings. Plants grown from cuttings are more easily budded than the Japanese multiflora seedlings. Another promising rose stock is a form closely related to *R. canina* which has so far proved free from the tendency of that species to throw suckers from below the point of union. *R. odorata*, S. P. I. 22449, while lacking in the extreme hardiness of the two stocks just mentioned, is proving to be a valuable stock for greenhouse forcing roses.

GUY E. YERKES.

FUR Farming a Growing Industry That the existing natural supply of furs can be supplemented by raising fur animals in captivity is being more fully appreciated year by year. Conceived by a few individuals only a comparatively few years ago, fur farming has steadily developed until now there are more than 4,000 fur farmers in the United States, Canada, and Alaska, most of them engaged in raising silver or blue foxes. The total investment in the business in the United States and Alaska is about $30,000,000, and in Canada about $11,000,000. Fur farming is also being undertaken in European countries and in Japan, where it is having a steady, quiet growth.

Every developing industry sooner or later reaches a stage where it requires scientific study. Fur farming is no exception, and Con-

gress has authorized the department, through the Biological Survey, to make investigations and experiments in the production of fur animals. These are now being conducted under wild and semiwild conditions with various species, including domesticated rabbits. Constant effort is made to obtain all information essential

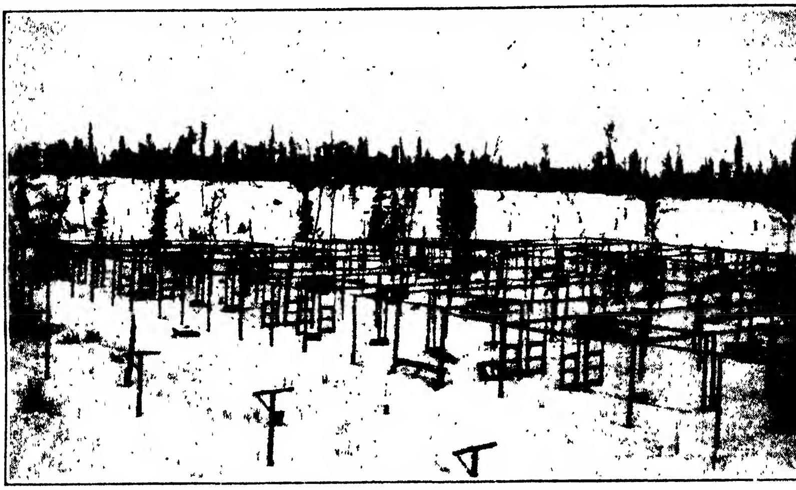

FIG. 102.—Well-organized fox ranch. Fox farms are found in practically all the northern tier of States from New England to Washington and Oregon

FIG. 103.—On a silver-fox farm. Fox farms produce more than 90 per cent of the silver-fox pelts sold in the fur markets of the world

to the requirements of this growing industry, with special attention to disease and parasite control and the utilization of fur as a natural resource. The experimental fur farm, where the work is in progress, is in Saratoga County, N. Y., and is open to the public on Wednesdays and Sundays from June to November, that visitors may note the work the Government is doing to assist fur farmers.

Blue-fox farming is confined chiefly to islands off the coast of Alaska, where the foxes have free range, but is gradually spreading to the mainland of that Territory and to Canada and the United States, where the animals are raised in pens.

For generations muskrats have been produced profitably with a small outlay of money and effort, chiefly on privately owned marshlands in New Jersey, Delaware, Maryland, and Louisiana. Scientific study of the requirements of muskrats is now being undertaken in their natural habitat with a view to their perpetuation as a valuable natural resource.

Beaver Fur Production

Should beaver farming prove profitable, it would make remunerative large areas now unproductive but well suited to such an enterprise. The production of beaver fur might be readily increased

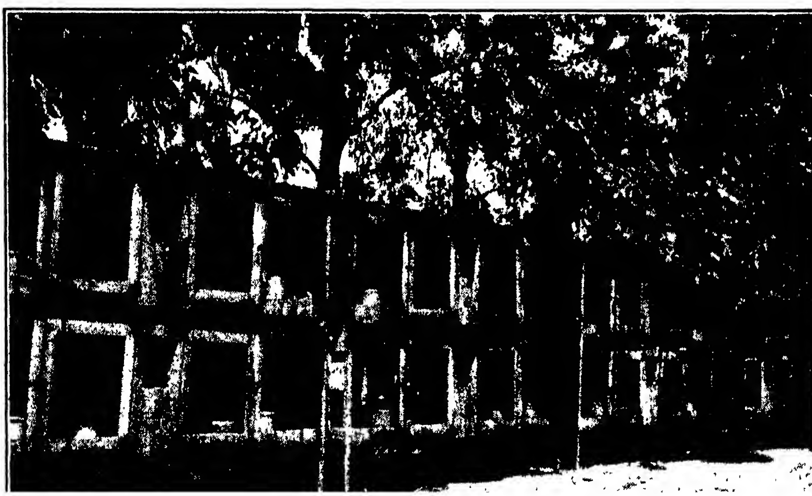

FIG. 104.—Section of a large rabbitry. Better meat and fur are produced by hutch-raised than by wild rabbits

by the simple expedient of restocking depleted areas within their original range, where the animals could feed and breed without molesting forest or farm property.

Skunks, raccoons, and minks are not difficult to raise in pens, but at the prevailing raw-fur prices the undertaking with these species would not pay. Only in very exceptional instances have breeders been successful in producing litters of either martens or fishers in captivity. Rabbits, however, are being raised profitably for both meat and fur, and the rabbit industry is developing rapidly, especially in Pacific coast States.

There is ample basis for a sound industry in propagating fur-bearing animals. Fur farming is growing and should become a permanent addition to our agricultural development, for it is desirable both in the utilization of nonagricultural lands and in the production thereon of valuable crops of fur.

FRANK G. ASHBROOK.

FURNITURE Destruction by Insects The vogue during the last few years for furniture upholstered with mohair has placed in thousands of homes throughout the country favorable breeding places for a group of common household pests. Although this furniture, if properly constructed by the manufacturer and intelligently cared for by the retailer and housewife, need not suffer more than other furnishings of the home, the fact remains that lack of information has brought about a condition throughout all the States which has increased tremendously the calls upon the department for information concerning insects in upholstered furniture. To meet these demands a special investigation has been started and has progressed sufficiently far to date (September, 1926) to warrant a general statement regarding the insects involved, their methods of attack, and the means for controlling them.

Taking the country over, the most destructive pest on mohair-covered furniture is the webbing clothes moth (*Tineola bisselliella*). A very large percentage of real loss is due to this common fabric pest. This moth is present in nearly all homes, and if mohair-covered furniture is not properly manufactured or cared for the newly hatched "worms" work down through the pile, become established underneath the warp, and feed upon the woolen threads of the pile where they pass beneath the warp. By thus severing the pile they are responsible for the development of bare spots on the covers resulting from the falling out of the severed pile when the infested furniture is brushed or is treated with a vacuum cleaner. Although these bare spots do not injure the usefulness of the furniture, they destroy its aesthetic value and are responsible for the expenditure by the American public of a sum exceeding half a million dollars annually for fumigations, various other treatments, and the upholstering charges for repairing or replacing covers.

The second most serious pest on upholstered furniture is the furniture carpet beetle (*Anthrenus fasciatus*). This insect causes its greatest injury by establishing itself within the furniture, where it brings about a condition of flabbiness and shabbiness by devouring the curled hair used in the upholstering. In Washington, D. C., this carpet beetle is the most important furniture pest.

Two other insects often reported as infesting furniture are the ordinary tobacco beetle (*Lasioderma serricorne*) and book lice or psocids. These two pests are frequently spoken of as "tow bugs." They feed normally upon dried vegetable matter, and when in furniture they feed upon the flax or other straws or Spanish moss used in the upholstering. They cause practically no real injury to the furniture, although the adult tobacco beetle sometimes does eat small round holes in the mohair or leather covers in an attempt to escape. Both the tobacco beetles and psocids annoy the householder by crawling over the furniture and by dropping from it and crawling to all parts of the house.

Facts regarding the life habits of furniture pests and their control have been published and are available for distribution to those applying for them to the Department of Agriculture.

E. A. Back.
R. T. Cotton.

Game Surpluses Perplex Wild-Life Guardians Accustomed as we are to think of game as requiring protection, it may seem incredible that under certain conditions it can become locally overabundant. As nature lovers we are prone to overlook practical problems in game conservation, and some of these are so vital that our oversight has at times defeated our main purpose. In protecting game from overhunting, natural enemies, and disease we sometimes fail through ignorance to provide an adequate supply of that prime essential to all living creatures—food.

Some of the methods employed in the successful handling of domestic animals are applicable in wild-life management. No wise

Fig. 105.—Starving elk. A splendid bull in Jackson Hole, Wyo., still alive, but too weak to rise from its last bed. Hundreds of elk had browsed the willows until the thick stems would yield little more than wood pulp. In such a place all the elk died of starvation, whereas a smaller number might have wintered well

farmer would long attempt to maintain more livestock in a pasture than could subsist there. Similarly, game stocks should not be permitted to increase until they consume more than the normal seasonal forage growth. With the more palatable plants injured or killed and the normal producing capacity of their range diminished, part of the game will face starvation unless their numbers are correspondingly reduced.

An excessive stock of game may accumulate even when parts of its range are open to hunting. This is illustrated in the region about the Yellowstone, where elk have starved by thousands during severe winters, although feed for them is provided at the adjacent elk refuge of the Biological Survey. Following several disastrous winters, the latest in 1919, they have increased to an unwieldly number.

This asset may thus become a liability in the next hard winter by a disastrous reduction of the herds to smaller numbers than would have survived under wiser management.

A striking example of the baneful results of overstocking a refuge from which emigration is negligible is afforded in the Kaibab National Forest. Here the destruction of forage and young forest growth by excessive numbers of mule deer presents a serious problem that efforts of the Forest Service and cooperating bureaus have thus far failed to solve.

Overabundant Buffalo

On the big-game preserves maintained by the Biological Survey the increasing numbers of buffalo and elk have made the disposal

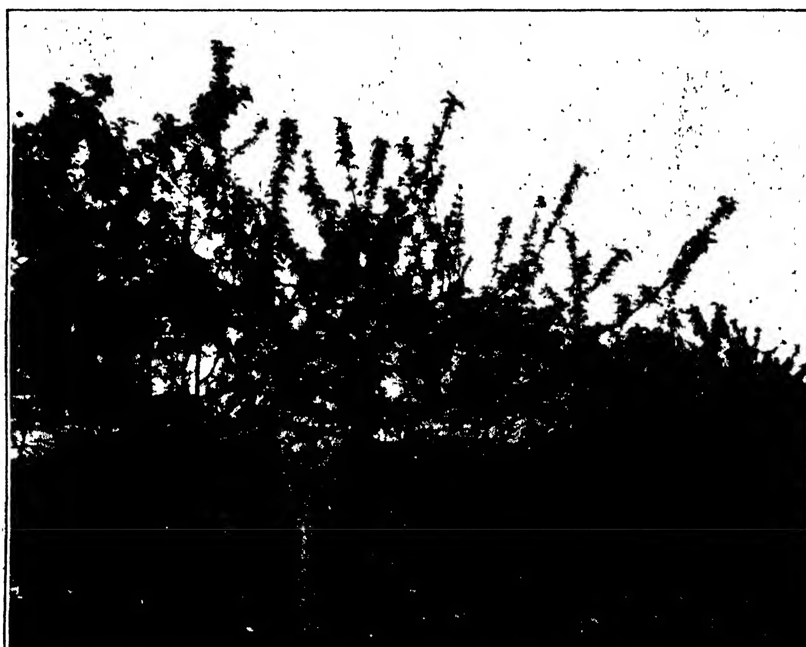

FIG. 106.—Apple orchard damaged by deer. The lower branches are killed by repeated cropping of deer from an adjacent State deer range in Pennsylvania that has become overstocked

of a surplus imperative, to prevent the lowering of forage production and the consequent starving of the animals. Since no hunting can be permitted in such places, reduction is accomplished mainly through the capture and sale of animals for stocking or exhibition purposes. In the winter of 1924–25 a surplus of 221 buffalo was removed from the National Bison Range in Montana, and the next winter 388 surplus elk were shipped alive from the same reservation.

The overstocking of well-located game refuges that are not too large may usually be prevented by regulated hunting outside. On larger preserves, or on those from which there is little or no overflow, hunting or reducing the surplus by other means may be of vital importance to the residue. Efforts to conserve and increase wild-

animal life frequently call for wise control measures, including disposal of surplus stock for the welfare of the numbers that it is desired to maintain. Wild-life resources properly utilized will yield the maximum of economic and recreational returns.

EDWARD A. GOLDMAN.

GARMENT Fitting for the Home Dressmaker

Fitting garments is the greatest difficulty which women encounter in home dressmaking. Cothing manufacturers find that much waste results from clothing which does not fit and which is eventually returned to them from the retail merchants. To retailers, also, the cost of fitting garments on customers is a large item of expense. These difficulties are a result of making patterns and ready-to-wear garments without accurate measurements for sizes.

Of course, differences in individuals also cause many of the difficulties in fitting. Few women approach or equal the perfect form or the forms which are used by pattern companies and clothing manufacturers. Racial and family tendencies are some of the chief causes for this wide variation. The work which people do, ways of sitting, standing, and walking, and food habits also have an effect on body development. Round shoulders, narrow chest, protruding abdomen, and many other irregularities result.

Some pattern companies as well as some ready-to-wear organizations are now making a special effort to get rid of the most outstanding difficulties. New sets of measurements are being established which are especially adapted to specific groups, such as the short stout figures, tall stout figures, and other irregular sizes. Women with figures differing greatly from the average should make use of such patterns and dresses.

A comprehensive study of group measurements which will give the group sizes of people living in the United States to-day has been planned by the Bureau of Home Economics. Many thousands of individuals should be measured in order that certain group proportions may be obtained. These size groups will eliminate much waste of time as well as material both at home and in the factories. Many measurements have been taken in the past merely to show physical development, but these are not applicable to the clothing industry. A beginning was made on this problem of scientific measurements during the World War when many thousands of American soldiers were measured for the purpose of establishing sizes for uniforms.

Fitting Difficulties Studied

In the meantime, to help the homemaker in fitting her own clothes or those of her neighbor, a study was made of garment-fitting difficulties and their remedy. Dress patterns of similar design from the principal pattern companies were compared by placing those of the same size upon each other with the center front lines coinciding. The results show many variations. This is one reason for the wide range of fitting difficulties which developed when the patterns were used. Dresses of unbleached muslin were then cut from each pattern and basted. Women whose bust measure corresponded to those of

each pattern were used as models and the dresses fitted on them. The wrinkles and all ill-fitting portions were noted, the necessary changes made, and recorded.

Comparatively few dresses and blouses worn at the present time are correctly fitted in every detail. Very often there are wrinkles which are unnecessary and which detract from the beauty of the garment. The underarm seams may not be plumb or the shoulder line may not be in its correct place. In many cases the armhole is too large or it comes at the wrong place on the shoulder and so gives either a pinched or a drooping effect. Bulges in the armhole which were not removed before setting in the sleeve may be the cause of ugly wrinkles in the back or front of the dress at the armhole. The effect of even a well-fitting sleeve is spoiled by an incorrectly shaped armhole.

One precaution which will eliminate part of the trouble in fitting is to experiment with different makes of patterns until the one is found that fits best and needs the least altering. It is not always best to buy patterns according to bust measure. For example, if a woman has a large bust and comparatively narrow shoulders or if the person is slender but has broad shoulders in comparison to the size of the bust, it may be best to buy a pattern that fits the shoulders.

After buying the pattern it should be carefully checked with the measurements of the body, especially the width across the back, the distance around the upper arm, and the hip and bust measurements. Once a dress is cut too small at any part it is a difficult thing to remedy the mistake successfully. However, the alteration of the pattern to correspond with these measurements will not eliminate all fitting problems.

In cutting a garment it is imperative that the pattern be kept straight with the grain of the material according to the pattern markings. Lengthwise or crosswise folds of the material should always be exactly parallel or at right angles with the selvages. The temptation is sometimes great to swing the pattern even a half inch off center, especially in cutting sleeves in order not to piece a small corner, but this is fatal to the appearance of the finished garment and can not be remedied. Also another important point is that the edge of the pattern must be followed exactly when cutting out a garment. Most patterns allow for seams. If the edges are not cut straight, the garment when basted up is larger than intended in some places and smaller in others, and fitting becomes more difficult.

Locating of Seams

After cutting and basting the garment it is ready to be fitted. All important seams should then be properly located. The neck and shoulder lines should be the first to be corrected. The neck line should form a good curve from the bone at the base of the neck in the back to just above the collar bone in front. The line should be high rather than low at the sides.

A properly placed shoulder seam acts as an anchor to a well-fitted garment. It should be a straight line from the highest point at the neck to one-half inch back of the highest point on the tip of the

shoulder. This line should not be visible either from the front or the back when the garment is worn.

The underarm seam should be located directly under the high point of the shoulder and should appear to be a continuation of the shoulder seam. It should form a perpendicular line from the armpit to the floor.

The location of the armscye and the fitting of the set-in sleeve into the armscye are two very important steps in fitting a garment. The armhole when viewed from the front or the back should lie parallel to the center front and center back of the garment. It should pass over the tip or highest point of the shoulder. From the side it should show a good curve over the top of the shoulder.

A good set-in sleeve will allow sufficient distance from the top of the armhole to the underarm line to correspond with the distance between the tip of shoulder and the armpit. The set-in sleeve should have no fullness on the lower half of the armscye and seldom any gathering over the upper half. However, the sleeve edge always measures an inch or more longer than the edge of the armscye. This fullness is eased in by pushing the material in place with the thumb while basting and prevents uncomfortable and unsightly strain across the arm.

In order that the fitting process need not be repeated on every garment, a guide or foundation pattern should be made of firm unbleached muslin, gingham, or cambric of good quality. A simple dress pattern with a normal shoulder seam, high neck line, and set-in sleeves is the best type of pattern to use for this model. Almost any style of dress can be designed from it, and much time will be saved if it has been correctly fitted to the figure.

MAUDE CAMPBELL.

GRADING Animals and Meat to Show Quality What are the factors which make one piece of beef tender and another tough; one very juicy and another very dry; one pleasingly flavored and another tasteless and unsavory?

The livestock producer, the packer, the retailer, and especially the meat consumer are vitally interested in the answer to these questions. The consumer and retailer want to know how to tell the difference between a tough and a tender piece of meat before it is cooked, and the packer and producer want to know the characteristics in the live animal that will tell them the kind of beef that is under the hide.

The producer and packer have known in a general way that the blocky, thick-muscled, smoothly-finished steers, ranging in age between 1 and 3 years, usually produce the highest grade of beef. Meat dealers, both wholesalers and retailers, have learned that thick, blocky carcasses carrying a thick, even distribution of firm, creamy-white fat over the body; bright cherry-red color of well-marbled lean; and pinkish-white bones are likely to give greatest satisfaction when the meat gets on the consumer's plate. But the majority of consumers have not been able to distinguish the choice or prime from medium or common grade meat until the meat, already purchased and cooked, is eaten.

It has been rather well established that fat is one of the factors largely responsible for high quality in meat, but unfortunately the public often discriminates against it, in many instances for economic reasons.

The factors responsible for tenderness or lack of tenderness of fiber, the cherry or dark-red color of the lean, the white or yellow color and even or patchy distribution of fat, and the high flavor and juiciness of the meat or the lack of those characteristics seem to lie deeper and have not yet been fully determined. Doubtless there are many other factors which influence the quality and palatability of meat.

Investigations Under Way

To segregate these various factors and trace them back to ultimate causes in the live animal, its breeding and feeding, is a problem to which much attention is now being given by the Department of Agriculture and a large number of State agricultural colleges and experiment stations in cooperation with the National Livestock and Meat Board. During the latter part of 1925 a project having for its object the determination of the factors which make quality and palatability in meat was begun and continued throughout 1926.

The cattle used for the study are those in cattle-feeding experiments at the various State and Government experiment stations.

The cattle are graded when they are placed on feed, after they are finished and ready for slaughter, and finally in the carcass after slaughter. The grading committee of three consists of one from the State experiment stations, one from the Bureau of Animal Industry, and one from the Bureau of Agricultural Economics. A score card is used each time an animal is graded, so that each man makes a word picture of the way the animal appears to him from the standpoint of grade. In a few instances photographs have been taken at the time of grading. By grading at the beginning and end of the feeding period it is possible to note differences that take place in the outward appearance of the animal during the fattening process.

By such methods it is hoped to discover the characteristics in the feeder which under certain fixed feeding conditions will produce certain results, thereby enabling the producer to select more accurately the kind of animals he desires and know more definitely, in advance, the grade of beef he can produce.

The purpose of grading the carcasses after the cattle have been slaughtered is to determine the correlation between the various characteristics of the live animal and its carcass and to work out cause and effect relationships. Such grading also serves as a means of tracing the results of histological, chemical, and cooking tests back to the live animal.

Rib Cuts Sent to Washington

After the carcass grading, a good representative from each lot of animals receiving the same ration is selected for further study. A portion of the wholesale rib cut of this animal is sent to Washington, D. C., for physical and chemical examination and for cooking and palatability tests.

During the feeding season of 1925–26 about 900 animals were graded, and a still larger number were graded during the fall of 1926.

Cooking, chemical, and physical tests were made with more than 100 samples.

It is too early to draw positive conclusions but much is expected because of the combination of forces working on the problem. It is confidently expected that within a reasonable time we will know definitely what makes the T-bone steak tender or tough.

L. B. Burk.

GRAIN-Dust Explosions Cause Big Farm Loss We are coming more and more to realize the need for the adoption of precautionary measures against dust explosions. Explosions in large industrial plants are particularly spectacular because of the heavy loss of life and extensive property damage, but the smaller explosions, far greater in number, represent an enormous loss in life and property.

Fig. 107.—Dust explosion in a grain-threshing machine in eastern Washington. These explosions and fires have caused extensive losses to grain and machinery

Investigations by the Bureau of Chemistry have shown that practically all of the grain dusts are explosive when scattered as a cloud in the air and that the explosion hazard is present from the time the grain is cut in the field until it leaves the export terminal elevators. Many explosions have occurred during threshing, both in fields and in barns, in the small country elevators to which farmers deliver their grain, in the large elevators where grain is stored, and in the mills and industrial plants where grain is milled into flour, manufactured into starch, ground into feed, or made into any of the numerous cereal products now on the market. All that is necessary to produce an explosion is to have a cloud of the finely-pulverized product in suspension in air ignited by a spark, flame, or heated surface. A spark of static electricity is sufficient to ignite the dust cloud. A hot bearing on machinery can start a fire which may cause a dust explosion.

Dust explosions and fires in grain-threshing machines have been most frequent in the wheat-growing territory of eastern Washington

(fig. 107), northern Idaho, and northeastern Oregon, although they have been reported from many other sections of the country. As a rule these explosions occur in dry sections or in places where the humidity is low. In the Northwest the explosions usually begin with the opening of the threshing season in July and continue until the middle of September. Here the explosion hazard is increased by the presence of wheat smut. When the smut balls are broken during threshing, the light, fine dust produced floats in the air to form a highly explosive mixture. Before the development of methods of preventing such explosions the losses in the Northwest alone were very high, being estimated at $1,000,000 during 1914 and 1915. In many cases not only was the machine destroyed (fig. 108), but the fire spread to the straw stack, the sacked grain, and the grain standing in the field. Even since the development of equipment to prevent such explosions and fires it has been estimated that the preventable losses in this part of the country amount to from $15,000 to $75,000 each season.

FIG. 108.—All that remained of a threshing machine following a dust explosion and fire

Devices for Threshing Machines

To prevent dust explosions of any kind it is necessary either to eliminate the dust cloud or the source of ignition or to change the atmospheric conditions in such a way that combustion can not occur. In the case of threshing machines the problem has been attacked in several ways.

Fans have been designed to collect the dust formed in the interior of threshing machines and thus prevent the formation of explosive mixtures. These fans are light and relatively inexpensive and require little power for their operation. They are usually installed on the deck of the machine. (Fig. 109.) Besides reducing the explosion hazard, they help to clean the grain, thus improving its grade and also prevent the dissemination of smut spores, which are likely to infect the ground and attack the next year's crop.

Investigations in the field indicated that a large proportion of the explosions occurred when dust clouds in or about the machine were ignited by sparks of static electricity produced by the friction of moving parts of the machine. Tests showed that heavy charges of

static electricity were present on many of the machines—in some cases the measurements showed more than 50,000 volts. To remove these charges a system of wiring was devised in which the various parts of the machine were connected by wires with a main wire or cable that was thoroughly grounded by being attached to an iron rod driven into the earth. So long as positive contacts were maintained between the ground wire and the various parts of the machine this method proved effective in reducing the hazard of explosions due to the ignition of dust by sparks of static electricity.

To provide protection against loss from fires starting in threshing machines a chemical fire extinguisher was designed. This equipment consists of a cylindrical steel tank connected with pipe lines leading

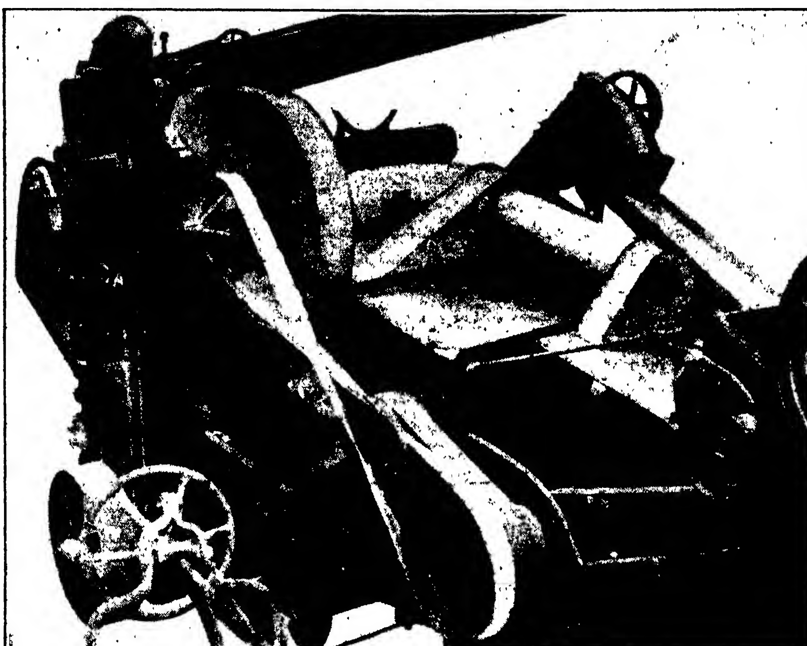

FIG. 109.—A threshing machine equipped with a dust-collecting fan

to different parts of the machine. The extinguishing liquid is held in the tank until it is released through the pipe lines by the opening of a valve. The valve can be opened by hand or automatically operated by the heat from a fire in the machine. The extinguisher is mounted on the deck of the machine. After the harvest season it may be taken down and used for general fire protection about the farm.

Hazards in Elevators

The interest of the farmer is not confined to dust-explosion prevention on the farm. He is interested also in the work being done to reduce the explosion hazard in the elevators or warehouses where his grain is stored. Perhaps he has a share in a cooperatively operated elevator. Perhaps he has suffered a loss on grain which he has stored in an elevator without protection against damage from

dust explosions. Again, the destruction by a dust explosion and fire of an elevator in his territory may mean a longer haul to get his grain to market or even make it impossible for him to market his grain when he wishes. For all these reasons the farmer, as well as the grain producer, the elevator operator, and the miller, or user of grain and cereal products, has a vital interest in the work of the Bureau of Chemistry on the cause of dust explosions and the development of methods of preventing them.

DAVID J. PRICE.
HYLTON R. BROWN.

GREAT Plains Agricultural Development The agricultural development of the Great Plains has been an important economic problem for 50 years. The United States Department of Agriculture and the State experiment stations of 10 States have been conducting extensive coordinated investigations of this subject for the past 20 years. Much information has been obtained, and many publications have been issued, but many important problems still remain unsolved. Miscellaneous Circular No. 81, "The Relations between Crop Yields and Annual Precipitation in the Great Plains Area," seems to present some of these problems in a new light, and to indicate methods for their solution. These facts and suggestions, supplemented by 45 years of experience and observation, may be summarized briefly as follows:

The disastrous experiences of hundreds of thousands of settlers in the Great Plains during the last 50 years have been due largely to (1) lack of experience with the soils, the climate, and the adaptation of crops in this region; (2) the absence of an economic justification for the bringing into agricultural production of large areas of raw prairie; (3) the adoption of a one-crop system of grain farming and the failure to develop the livestock industry in connection with grain production.

The premature development of political, social, mercantile, financial, and transportation organizations, that could have no permanent support except agriculture, in advance of the agricultural development of the region, has been another serious handicap to the early settlers in the Great Plains. These desirable but none the less exploitational organizations were supported in the earlier stages of the influx of settlers into this undeveloped region by issuing bonds and by the funds brought in by the settlers. The next source of revenue for their support was the money obtained from farm-loan companies. Much of the land was preempted by adventurers who mortgaged their land for all the money they could get from the loan companies. Many of these preempters made no effort to bring their land into agricultural production, but the money they borrowed went into circulation and helped to support the parasites. When these mortgages came due, they usually were foreclosed. The mortgagor seldom received any returns from the foreclosure, the money being absorbed by the land agents.

Speculation Became Rife

The title to the foreclosed land also fell into the hands of land speculators. Thus began, in the early eighties, the most gigantic

organization of farm-land speculation that this country has ever experienced. Practically every individual over many thousands of square miles was interested, directly or indirectly, in the sale of farm land at the highest price obtainable. The slogan, "If you can't boost, don't knock" became a sentiment that was almost religious in its fanaticism, and was supported by powerful financial and political organizations. Inflation of land prices in utter disregard of the revenue-producing capacity of the land or the economic laws governing the increase in agricultural production was inevitable.

Such were the conditions in 1905 when the dry-land agricultural investigations were established in the Department of Agriculture. At that time the State experiment stations of the 10 States lying wholly or in part within the Great Plains had done but little investigational work in dry-land agriculture, and there was no coordination of the work of the several stations with each other. Charlatans of all descriptions, employed by land-selling agencies, were traveling over the country, each claiming to have discovered some new system that was to revolutionize the agriculture of semiarid regions, and to make possible the profitable production of crops where repeated efforts to do so had previously failed. Land exploitation was well organized by shrewd, capable, and unscrupulous men. The comparatively few legitimate farmers who still remained in the Great Plains with a fixed determination to develop permanent homes and a stable agriculture, eventually found themselves handicapped by inflated land prices, high taxes, and low prices for their products, and much misinformation as to farming methods.

The dry-land agriculture investigations of the department began in 1905, in a small way, by first enlisting the informal cooperation of the State experiment stations throughout the Great Plains. In 1915, 24 field stations had been established in this region. Owing to lack of funds, this number has since been reduced to 19, which are now in operation. The results from 23 stations, for an aggregate period of 303 crop years, have been used as a basis for the publication already mentioned. From a careful study of these data the following facts are deduced:

Soils Are Very Fertile

It is now known that a major portion of the soils of the Great Plains are of great fertility and well adapted to the growth of staple crops, and that the rough, broken sandy and stony lands are so interspersed amongst the tillable lands as to make them available for pasture for livestock. It is also known that the mean climatic conditions of the entire area are such as to make possible the development of successful agriculture throughout this vast region of over 450,000 square miles.

It should be constantly borne in mind, however, that soil and climate do not alone insure a profitable agriculture in this or in any other region. Next in importance to soil and climate is the assurance of a permanent market at profitable prices for the crops that are raised. This is an economic factor over which the individual farmer has no control, except in so far as it is affected by the kind and quality of the crops produced, and possibly by the local marketing facilities. Closely associated with this, is a knowledge of the

adaptation of crops to the local environment in relation to both the production and the sale of crops. The relations to each other of the crops grown in rotations also must be given thoughtful consideration. Of no less importance is the selection of the livestock to consume the roughage and the coarse grain produced, and to provide motive power. All of the above-mentioned factors may be grouped under the general designation of farm organization. Next comes the selection of the necessary implements for tillage, seeding, harvesting, and handling the crops grown under the conditions, and in the relations to each other in which they are grown. The extent to which the tractor, the motor truck, and the combine harvester are to be used will be important factors in the selection. The general character of the soil and the topography of the farm should be considered in this connection.

Problem of Implement Use

Having adopted a system of farm organization and selected the implements, the problem of how to use these implements in the most economical manner—how to accomplish a given purpose with the least possible expenditure of energy and money—presents itself. This is, perhaps, the most difficult group of problems to meet, for they are constantly changing and there is no solution of any of them that will be the same under constantly changing conditions. When and how deep to plow; when and how to summer fallow, and when to grow a cultivated crop in the rotation between crops of small grains; when to use the self-binder, when the header, and when the combine harvester, and scores of other problems of like nature must be met and solved on very short notice and in connection with combinations of conditions prevailing at that particular moment on that particular farm or field. Only long practical experience in that particular locality can fit a man to successfully cope with such problems.

In the eastern United States, where the land was originally heavily timbered, it usually required about three generations—a hundred years—to clear a farm of from 100 to 200 acres and bring it into full production. During all that time there was accumulating the results of practical experience on each particular farm. It is doubtful whether any member of the third or fourth generation that has grown up on such a farm ever fully realized that the traditions that he inherited were the most valuable part of his estate. It is still less probable that any owner of a virgin farm in the Great Plains could be convinced that it will take about a hundred years before he can reasonably expect his farm to arrive at full production through cumulative practical experience; but there are elements of probability in both these statements worthy of careful consideration by those who are interested in the agricultural development of the Great Plains.

The problem of the adequate capitalization of a farm in the Great Plains has been left until the last, when perhaps it should have been the first to be considered. There is a very general opinion that a man with small capital has a better chance of success in agriculture in the newer than in the older settled portions of the United States. Experience, observation, and investigation make this assumption appear of doubtful validity. It is true that raw land costs less per

acre in some parts of the Great Plains than improved farms in some parts of the eastern United States, but it is also true that the economic farm unit in the West is probably twice the size of that in the East. It is also true that all kinds of farm improvements cost more in the West than in the East. In fact, there are many farms for sale in the East at a price that would not cover the cost of the improvements now upon them, at present cost of material and labor. Freight rates, on both what a farmer sells and what he buys, are higher in the West than in the East. Farm labor is higher in the West than in the East, except near large cities.

Average Wheat Yields Large

Investigations show that, on an average, through a long term of years, larger yields of wheat per acre can be obtained in the northern Great Plains than the average for the wheat-growing States of the whole United States. In the southern Great Plains, the sorghums largely take the place of wheat and corn in the Northern and Eastern States. The opportunity for a direct comparison of crop yields are, therefore, not as good in the southern as in the northern Plains, but the evidence at hand indicates that there is little difference in the general crop-producing capacity of these two regions of the Great Plains, and that they both compare favorably with other portions of the United States. There is, however, this difference. In the Eastern States a complete failure of all crops is almost unknown, whereas in the Great Plains such failures are common, and in only about two years out of three are the yields sufficient to yield a profit. This makes it necessary for the farmer in the Great Plains to have sufficient working capital to tide him over these lean years.

On the other hand, investigations show that the average yields in the northern Great Plains, measured in terms of bushels of wheat per acre, are 16 bushels. If, however, the inhibiting factors other than deficient annual precipitation could be reduced to the same extent on the average throughout the entire period that they have been in some instances these average yields would be over 30 bushels per acre. It is a fact that some of these inhibiting factors, such as hailstorms, hot winds, and extreme drought at critical periods in the development of the crop, are entirely beyond the control of man. There are, nevertheless, many other factors, such as the loss of moisture from weed growth, faulty systems of tillage and crop sequence, poor seed, plant diseases, and insect pests that are more or less under man's control.

It therefore seems reasonable to expect that the average crop yields of the Great Plains may in time be increased by better farming practices from the equivalent of 16 bushels of wheat per acre to 20 bushels, or an increase of 25 per cent. When this time comes, and there is a real economic demand for increased agricultural production in the United States at prices that will yield the farmers fair profits on their investments of money, labor, and managerial ability, the Great Plains will become one of the greatest food-producing regions of the world. In the meantime, the agriculture of the Great Plains should be allowed to develop naturally without artificial stimulation, and investigators and practical farmers now established in that region should continue to add as rapidly as possible to the

store of agricultural knowledge that is absolutely essential to the ultimate development of the undeveloped agricultural resources of the Great Plains.

E. C. CHILCOTT.

HAY Standards and Inspection System Hay marketing is a comparatively simple business procedure when the seller and the buyer are together to barter and negotiate the transaction. The seller quotes his price, the buyer can examine the hay and use his own judgment as to its quality and condition for his purposes, and controversies are either settled then or the sale is not made.

If all hay marketing could be conducted under these simple conditions the hay producers, dealers, and consumers in the United States would have little need for hay standards. But, as a matter of fact, only a small percentage of the carlot shipments ever move directly from the producer to the distant consumer. The vast majority of all shipments pass through at least two middlemen. Many shipments pass through four or five middlemen before they reach the consumer.

Hay Moved Long Distances

In spite of freight rates on hay that are much higher than those which prevailed before the World War period, baled hay is hauled hundreds, even thousands of miles by the railroads of the United States. It is a farm-management truism that farmers and stock feeders should produce their own hay wherever possible in order to eliminate the freight and handling costs incidental to the purchase of baled hay; but specialized American agriculture and climatic limitations often provide exceptions.

The Cotton Belt States, for example, prefer to utilize their best lands in large measure for cotton and their soils and climates are not widely favorable to hay production. Thus these States purchase thousands of carloads of timothy, clover, and alfalfa from Michigan, Ohio, New York, Indiana, Kansas, Nebraska, Oklahoma, Arizona, New Mexico, and the Province of Quebec in Canada. Similarly thousands of car and truck loads of alfalfa move from Arizona, New Mexico, and the Imperial and San Joaquin Valleys of California into the thickly settled areas of southern California where land is too valuable for hay production. Baled hay is transported by water routes in considerable volume from the Sacramento Valley of California to the Atlantic seaboard, from San Francisco and Seattle to Alaska, Mexico, Hawaii, the Philippines, and the Panama Canal Zone, and from New York City and Norfolk to Cuba, Porto Rico, and the Panama Canal Zone.

Contract is Essential

In this hay commerce where the producer and consumer are widely separated and where country shippers, dealers, brokers, distributors, bankers, and carriers function in the marketing process, the use of the contract becomes essential to evidence the quantity, quality, and value of the commodity that is involved in any given transaction.

Contract specifications for quantity and value are relatively easy to make definite and precise for the benefit of the parties to a hay contract, but specifications for quality are more difficult and complex. If the quality specifications of a hay contract are indefinite, loosely drawn, and based largely on personal opinion, the contract is questionable and of little value. On the other hand, a contract containing definite quality, quantity, and value specifications is of distinct value in all hay commerce.

Quality specifications may be written into a hay contract by means of descriptive terms or standards. The use of descriptive terms is not universally satisfactory. Orders and confirmations based on such descriptive terms as "good feeding timothy" or "pea green leafy alfalfa" are impossible of definite interpretation and the opinion of the buyer may differ radically from that of the seller, thus causing rejections, demands for discounts, diversions, demurrage, telegraphic expense, occasional lawsuits, and general dissatisfaction. Hay standards, on the other hand, which provide a definite basis for the quality specifications in a contract, are of material assistance to all parties to the transaction, and can be definitely interpreted by disinterested experts in case of disputes and claims.

The value of standards in the business of marketing hay is in direct proportion to their soundness, adaptability to many kinds of hay, and to the confidence of the public in the standards. Local hay standards, irrespective of their soundness, are of little value in interstate commerce, and standards formulated by either shippers' or dealers' organizations can not well enjoy the full confidence of all parties engaged in the business.

Standards have been formulated and promulgated by the United States Department of Agriculture as the official hay standards of the United States which meet the needs of hay marketing. They include standards for timothy and clover hay, alfalfa and alfalfa mixed hay, prairie hay, Johnson and Johnson mixed hay, grass hay, and mixed hay. They provide a common language for producers, dealers, and consumers to employ in the marketing of hay as well as definite quality specifications that will constitute a basis of contract. Wherever United States hay standards are employed they provide the foundation for a market news service that gives producers, dealers, and consumers more accurate information about the money value of various kinds and grades of hay than it is possible to obtain where sales are made on sample, description, or local grades. This is a matter of exceptional importance in hay marketing and in great need of improvement.

Value of Standards

Hay standards are of inestimable value to producers, shippers' organizations, and cooperative marketing associations in the development of direct marketing, because properly graded hay establishes confidence among consumers and creates premiums for high quality. The consistent shipping of hay out of any community on the basis of official United States standards advertises the community product, gives it a national brand of quality, establishes confidence, and

eventually develops wider and more profitable markets than when hay is sold by description or local grades.

Shippers in Wisconsin, Alabama, Nebraska, Kansas, and Wyoming are now making use of United States standards and inspection in the development of direct marketing from the producing communities to the consuming communities, and they are finding a big and profitable field into which they can extend their operations. Thousands of dairymen, stock feeders, and purchasing agents for lumber camps, road contractors, etc., constitute a group of consumers that is greatly desirous of purchasing car lots of graded and uniformly loaded hay direct from the producing communities.

To the consumer it may be said that ordering hay on the basis of United States standards and demanding confirmations on the same basis, together with a Federal hay-inspection certificate to evidence the contract specifications, will insure the delivery of the kind and quality of hay wanted. Experience with United States hay standards in such consuming markets as Chicago, Denver, and Fort Worth has shown that the use of recognized standards and disinterested inspection has been of value in assisting the consumer to purchase the kinds and grades of hay wanted and in eliminating many controversies with shippers. Inspection at receiving markets is proving a strong educational force, also, in educating shippers to load cars uniformly and with those classes and grades of hay in greatest demand and for which the highest prices are paid.

The Department of Agriculture maintains a hay-inspection service in numerous markets and at numerous shipping points in cooperation with commercial exchanges and State departments of agriculture. This service is constantly increasing as shippers and consumers become aware of its value in the marketing of hay. The service provides original inspections, secondary inspections to show a change in condition, and appeal inspections on grades in dispute. Such inspections are disinterested and are made by licensed men who have been given thorough training and whose work is supervised by Department of Agriculture supervisors located at Washington, D. C., Chicago, Atlanta, Kansas City, Salt Lake City, and San Francisco.

EDWARD C. PARKER.

HIGHWAYS and How They Are Paid For On January 1, 1926, there were 3,001,825 miles of public rural roads in the United States. Of this large mileage, about one-eleventh, or 270,653 miles, were classed as State highways and the remaining 2,731,172 miles were county and local roads. The smaller mileage has been set apart for improvement under the supervision of the State highway departments, and the larger balance is for the most part under the jurisdiction of county, township, and other local authorities.

At the same time, New Year's Day, 1926, there were 145,509 miles of the State highways, or 54 per cent of the total, that had been improved with some form of surface, varying from the inexpensive sand-clay and gravel surfaces to high-class and expensive pavements.

Classifying as higher types all surfaces better than water-bound macadam, and as lower types the macadam, gravel, sand-clay, and similar surfaces, the roads improved with the higher types of surfaces accounted for 44 per cent of the surfaced mileage, and those improved with lower types made up the remaining 56 per cent. In addition to these surfaced roads there were 32,219 miles of the State highways that had been improved by grading and drainage.

Turning to the county and local roads we find that there were 376,406 miles, or 14 per cent of the total that had been surfaced; and of this surfaced mileage 12 per cent had been improved with surfaces of the higher type and 88 per cent with those of lower type.

State Highways Most Improved

It will be seen from these figures that the State highways are much more highly improved than the county and local roads; and this condition is entirely consistent with the usage of the two classes, as shown by traffic surveys made by the Department of Agriculture in a number of States. In Maine, for example, the survey showed that each mile of the State highway system was used by an average of 1,044 vehicles daily; and in comparison the State-aid or secondary highways were used by 244 vehicles, and the local or third-class highways by only 29 vehicles daily. As a similar condition has been shown to exist in each of the other States in which the department has made surveys, it is apparent that a higher degree of improvement of the State highways is fully justified by the greater traffic which they serve.

But granting that the heavier traffic on the State highways requires a higher degree of road improvement, the reader, remembering that the mileage of local roads is 10 times as great as the total length of the State highway systems, may still want to know whether the expenditures for the two classes of roads are fairly proportioned to their total service.

This question can be satisfactorily answered. The total expenditure in 1925 for the construction and maintenance of State highways, exclusive of overhead and interest charges, etc., was $506,270,431. In the same year the expenditure for county roads was $461,539,280. The expenditure for State highways in 1925 was therefore approximately 52 per cent of the combined expenditures for State and county road construction and maintenance during the year.

Traffic on State Roads

That this is a very reasonable relation is shown by the facts revealed by the department's traffic surveys. In Maine, for example, the survey shows that approximately 53 per cent of all highway traffic in the State moves over the State highway system which includes only 7 per cent of the total highway mileage. In Connecticut approximately 60 per cent of the total traffic is served by the State system which also includes approximately 7 per cent of the total highway mileage. In Pennsylvania the State highway system includes 11 per cent of the total mileage of highways and carries 68 per cent of the total traffic.

"Very well," says the farmer reader, "the money spent for the State roads seems to be pretty well justified, but how much do farmers use them?" The answer is definite and clear—very little. The traffic on the State highways is largely a traffic of city-owned vehicles. In the Maine and Pennsylvania traffic surveys only 5.4 per cent of the passenger cars observed on the State highways were farmer-owned. In Ohio the percentage was 12.4, and in a count of the traffic on the Bankhead Highway at the Georgia-South Carolina line the farmers' cars made up only 8.9 per cent of the total number. A similar situation is found with respect to the motor trucks.

Although the department's surveys do not indicate the relative use of the county and local roads by farmer-owned and city-owned vehicles, it is known that the former make up a very much larger percentage of the total traffic on the local roads than on the State highways. The probabilities are that the great majority of local roads are used almost exclusively by farmer-owned vehicles.

How Farmer is Burdened

It is this difference in the usage of the State and the local roads that makes it unwise to spend county revenues on the State highways; for the county road funds are obtained largely by property taxes, and, as the farmer is a large property holder, he pays a large part of the tax. When, therefore, the county revenues are used for the building of the main State highways the farmer is paying for highway facilities which he uses to a very small extent, and whatever amount is so used is not available for the improvement of the local roads which are really the farmer's roads.

The wiser plan is to pay for the main State highways with motor vehicle and gasoline taxes and State-wide property taxes, all of which are paid by the residents of cities in fair proportion to their use of the main roads. The fact that most of the traffic on the main roads is not confined to county limits is another reason in support of this plan.

Considering the United States as a whole the expenditure of county revenues for State highways is not a very large part of the total State highway expenditure. In 1925, when the total of current revenues (not including bond issue receipts) for State highways was $523,022,549, the portion raised by the counties was $71,737,028, or 13.7 per cent. But the percentage thus provided has increased in recent years instead of decreasing as it should; and the average county contribution would be much higher were it not for the fact that a number of the States, recognizing the responsibility of the State to provide for the main roads have practically or completely released the counties from the burden of contributing. There are still a number of States in which the counties supply upwards of 20 per cent of the current revenue required for the building of State highways and one in which the county contribution is more than 40 per cent of the total. Such county contributions are excessive in view of the small proportion of local usage of the main highways. Their effect is to place an unfair burden upon agriculture by excessive land taxation, and they should be greatly reduced, if not entirely discontinued.

The total funds available for State road purposes in 1925 amounted to $780,081,292. Of this amount $115,656,721 was carried over from the preceding year and the funds raised during the year amounted to $664,424,571. Twenty-one per cent of these current funds were obtained from the sale of bonds and other State securities, 14 per cent was received as Federal aid from the National Government, and nearly 11 per cent was contributed by the counties. The balance of $359,105,115, about 54 per cent of the total current funds, was raised by State taxation.

Of the portion of the State highway funds raised by State taxation in 1925, more than 80 per cent was supplied by motor vehicle license fees and gasoline taxes, amounting in the aggregate to $289,173,503. The balance of $69,931,612, or nearly 20 per cent, was raised directly or indirectly by State property taxes.

Gasoline and Vehicle Taxes

Since 1921 there has been a great increase in the portion of the State highway tax revenue raised by motor vehicle and gasoline taxes and a considerable decrease in the funds secured by property taxation. In that year the two forms of taxes paid by road users made up only 55 per cent of the current tax revenues, and property was taxed more or less directly for the remaining 45 per cent. In view of the direct benefit of these main roads to the road users of the State as a whole this tendency toward the relief of property taxation is a very desirable reform.

Contrasted with the methods of financing the State road improvements, the methods employed by the counties depend to a much greater extent upon property taxation and to a lesser degree upon vehicle and gasoline taxes. This is entirely consistent with the greater service rendered by the local roads to agriculture and the lesser service to motor vehicle owners as a class.

County and Local Road Funds

The total funds available for county and local road improvement and maintenance in 1925 were $780,912,729, of which $97,895,087 were carried over from the previous year. The current funds, therefore, amounted to $683,017,642. Of this amount 21 per cent was obtained by the sale of county bonds and other securities, from which it appears that the States and counties were carrying about the same portion of their improvement program with borrowed money.

Of the remaining current funds of the counties, nearly 6 per cent were received from the State governments as aid; 13 per cent were raised by motor vehicle and gasoline taxation; and the balance of 81 per cent was raised more or less directly by property taxation.

H. S. Fairbank.

HOG-Cholera Control Calls for More Immunization Of all the diseases of swine, hog cholera is by far the most serious, as it is so highly contagious and destructive. Farmers of every State have more or less knowledge concerning it, since there are few, if any, hog-raising communities that this plague has not visited at some time or other

since its first appearance in the United States in 1833. To understand present problems of hog-cholera control, a brief review of past events concerning the disease is desirable. Following its appearance hog cholera spread rapidly, considering the scant hog population at that time, and by 1875 was causing a loss of about $21,000,000 annually. In some sections swine raising was practically destroyed through recurring outbreaks and the high mortality in the affected herds. Numerous remedies were advocated and tried but they proved ineffective, though the value of quarantine and disinfection became recognized as a means of keeping the disease from spreading.

The discouraged swine breeders were not disposed to continue under the prevailing conditions and appealed to the Federal Government for assistance. In response Congress, in 1878, made it possible for the Department of Agriculture to undertake a study of this disease. An important epoch in these investigations was the

FIG. 110.—Typical appearance of pigs affected with hog cholera. A rough coat, lack of appetite, and watery eyes are among the most noticeable symptoms

discovery, in 1903, of the true cause of hog cholera. This important discovery led to the development in 1905 of the immunization treatment. From 1908 to 1913 there was a growing demand for the new treatment. But in the absence of restrictions or supervision over the production of serum and virus, impotent and contaminated products appeared on the market during those five years. This condition, together with faulty technic and the inability of some veterinary practitioners to make proper diagnoses of swine diseases, produced disappointing results in so many instances that the immunization treatment did not grow in popularity as was expected and as it deserved.

As a consequence hog cholera continued to spread, and the losses were increasing yearly. The swine industry faced these conditions in 1912, the year that marked the most extensive and destructive outbreak of hog cholera in the history of the disease in this country. The situation was so grave that it became a matter of consideration by the department and by Congress.

The next step taken was the passage of the virus-serum-toxin act of March 4, 1913, which placed establishments producing serum and virus under the supervision of the Department of Agriculture. Simultaneously an appropriation was made by Congress to enable the Bureau of Animal Industry of this department to conduct hog-cholera work in restricted areas in cooperation with several States. The principal objects were to study serum-virus immunization under field conditions and to establish, or rather reestablish, confidence in the treatment. This was the beginning of our hog-cholera field work, which now is conducted in cooperation with State regulatory authorities, State extension forces, veterinary practitioners, and swine growers in 32 States. The funds for field work for the current fiscal year are sufficient to enable the department to maintain 37 veterinarians in the field.

Work of Bureau Veterinarians

In Northern States, where local veterinary service is readily available to administer the treatment, the bureau veterinarians confine their activities to investigational, supervisory, and advisory lines in controlling outbreaks. In sections of the South, where local veterinary service is not available, they administer the treatment, and in some States where the laws permit it, they train a few reliable laymen to apply the preventive treatment.

In the period from 1913 to the current fiscal year swine mortality from cholera has been reduced from 130 hogs per thousand to approximately 30 per thousand.

Notwithstanding the savings brought about through the development and use of the immunization treatment, the disease is still causing much greater losses than need prevail—the monetary loss is still about $20,000,000 annually. Many farmers are slow in adopting improved methods of swine husbandry and some refuse to have their herds immunized because they are skeptical concerning the treatment. Others delay until heavy losses are inevitable, since serum is primarily a preventive and not a cure. This skepticism and delay result in maintaining centers of infection and the consequent reappearance of the disease.

Disease More Prevalent

Reports from the field indicate that the disease is more prevalent in some States than it has been in any year since 1912. Owing to the decrease in cholera during the last five years many farmers ceased to keep their herds immune, with the result that most of the hogs in the country are susceptible. During the two years ended June 30, 1926, only 21,000,000 doses of serum were produced as compared with 44,000,000 during 1923 and 1924. This indicates a reason for the unusual prevalence of the disease during the fall of 1926. The condition has been especially serious because serum producers soon exhausted their reserves and for a time were unable to meet the demands. The nature of serum production is such that it can not be hastened to meet emergencies. Ordinarily about 55 days are required to produce and test a quantity of the product ready for marketing.

From time to time so-called "breaks"—meaning symptoms of cholera among treated hogs—are reported in herds that have been

immunized, but the proportion is small compared with the number treated. No doubt some breaks are due to a loss of potency in the virus, or possibly the serum used, but experience shows that breaks are most liable to occur in hogs heavily infested with internal parasites or those affected with intestinal inflammation or other disease at the time of treatment, which lowers their vitality and resistance.

Generally it is not economical to use either serum or virus sparingly. The condition of the animal as well as its weight should be considered in determining the dose. Many successful practitioners administer, regularly, larger doses than are prescribed on the labels affixed to the bottles, especially if the herd is not in a perfectly healthy condition. When properly administered to hogs which are

FIG. 111.—Giving the preventive serum treatment. Swine owners need have no serious fear of cholera if their hogs are properly immunized

in fit condition and which receive proper care, the results of the immunization treatment against hog cholera compare very favorably with the results obtained from the use of other biological products in either human or veterinary medicine.

Stocker-Hog Business Based on Preventive Treatment

The stocker-hog business at the large public markets has grown beyond early expectations. A large number of pigs reach market when they are too thin to sell to advantage for slaughter. Formerly such animals were excluded from interstate trade for purposes other than slaughter owing to the danger of disseminating hog cholera. The perfection of the immunization treatment made it possible to prevent much of this economic loss, and regulations were issued

which permitted the shipment of such pigs to country points after they had been immunized under the supervision of representatives of the department. The regulations required that the immunized pigs be held at the market for three weeks after receiving treatment. The expense involved was so heavy that comparatively few could be sold for farm distribution.

Later the regulations were modified to permit shipment promptly after immunization to States where the regulations provided for the quarantine of the animals for a period of not less than three weeks.

This gave an impetus to the stocker-hog business, but it was found that heavy losses occurred in many shipments. After careful investigation the conclusion was reached that if this enterprise was to be placed on a stable basis it would be necessary to take the temperatures of all pigs to be immunized at public stockyards and to withhold treatment from those showing marked elevations of temperature, also those which had been held in the yards for a considerable time. The regulations were modified accordingly, with the result that there has been a marked reduction in the losses. At present the immunization of swine at public stockyards is giving fairly satisfactory results. The average loss is estimated at 3 per cent. Since the work was begun, in 1922, there has been a fluctuation in demand depending upon conditions. During the fiscal year ended June 30, 1926, 425,995 hogs were immunized. This number was exceeded in 1924, when 509,567 received the treatment.

Complete Eradication Desirable but Costly

It has been suggested that efforts should be made to eradicate hog cholera in the United States. While eradication is desirable, the general distribution and prevalence of the disease and the enormous expense make such a gigantic undertaking inadvisable, especially while large sums are being expended by the Federal and State Governments for the elimination of the southern-cattle tick and the eradication of bovine tuberculosis, dourine, and scabies of cattle and sheep.

The eradication of hog cholera would require the application of no less comprehensive and rigid measures than those adopted for the eradication of foot-and-mouth disease in this country, and our hog industry is in no condition to withstand such measures. Furthermore, we have an effectual, practical preventive treatment against hog cholera, which is not the case with tuberculosis and some of the other contagious diseases with which we are contending. Therefore, it seems advisable to continue present efforts to minimize losses through the proper use of the preventive treatment rather than to attempt the complete eradication of hog cholera.

U. G. Houck.

HOG Cycles and Possibilities of Regulating Them

The hog industry in this country has been characterized by successive periods of overproduction and underproduction ever since it became an important commercial part of American agriculture. These fluctuations are illustrated in Figure 112, which shows the variations in the number of

hogs slaughtered each year since the Federal inspection of slaughter was begun. The figures are shown for the 12 months from November to October, inclusive, which covers substantially all of the pigs farrowed during the previous calendar year.

These fluctuations in the supply of hogs have been accompanied by similar fluctuations in hog prices and are the major cause of the recurring periodic swings in prices.

This continuous variation in the number of hogs produced and marketed is due to two causes: (1) The erratic changes from year to year in the production and price of corn which result from variations in weather conditions and in the yield, and (2) the length of time which must elapse after farmers decide to make changes in their hog production until the time such changes begin to show up in increased or decreased receipts at the markets.

This latter element is due to the natural conditions which govern the production of hogs. If a farmer decided in the fall of one year,

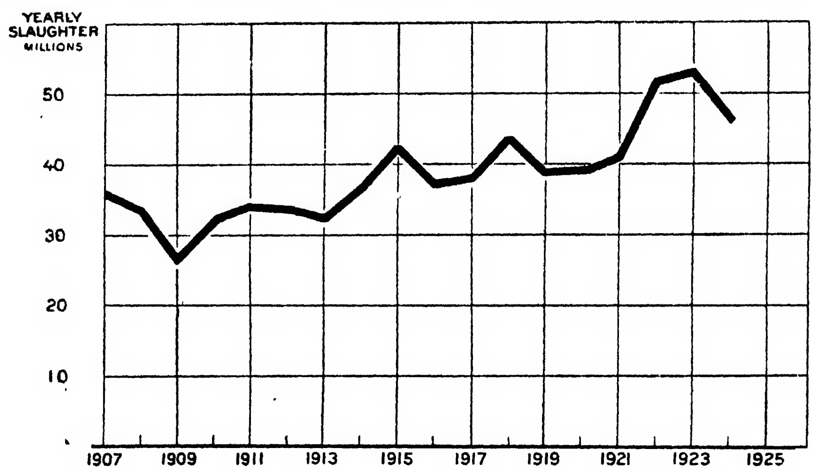

FIG. 112.—Annual slaughter of hogs under Federal inspection, November to October, inclusive, 1907–1924

say 1925, that hogs had been unusually profitable, and increased the number of sows which he was breeding, that would result in a larger number of pigs farrowed the following spring, in 1926. These pigs would grow and be fattened through the summer and fall of that year, 1926, and not until the fall would they begin to move to market.

Effect Felt Later

There is thus a lapse of from 12 to 15 months or even more after the time that the farmer has decided to increase his production of hogs before the increased supplies begin to reach the market. Meanwhile, if hogs had been scarce and high in price in the fall of 1925, they would still be scarce and high in the fall of 1926, since the increased supplies would not yet have begun to affect the market. Consequently hog producers would be encouraged, by the high prices in the fall of 1926, to expand their hog production still further. By the time these hogs would reach the market in the late 1927 and in

1928, however, the successive increases would have resulted in an oversupply of hogs and the cycle would already be swinging the other way once more.

This tendency to first go too far in expanding production of hogs and then go too far in contracting their production has been the principal cause of those erratic variations in supply which have resulted in the hog-price cycle.

The persistence of this cycle may be shown most vividly by comparing hog prices with corn prices. The fairly regular changes in this relation are very marked. Except under the disturbed conditions of the World War period, the tendency for changes in hog supplies to follow changes in the relation of hog prices to corn prices is clearly marked.

The corn-hog cycle is thus seen to be the resultant of variations in the production of hogs owing largely to the way in which farmers respond to corn and hog prices. If farmers were willing to store corn over from years of large crops to years of small crops in sufficient quantity, it would be possible to produce a practically constant number of hogs each year, and to make up for the difference in corn crops by merely increasing or decreasing the volume of corn in storage. The general adoption of this plan, it is true, would entail considerable expense for storage facilities, some loss through the deterioration and wastage of the stored corn, and the employment of a considerable amount of capital to finance storing the corn.

Partial Prevention Possible

On the other hand, the fluctuating production of hogs might be prevented to a limited extend if hog producers understood what was happening in the hog market and made only such changes in production as were necessary to keep production sufficient to use up the corn, without being led to make such great changes as they have made in the past in the hope that high prices could still be obtained when their increased supplies were ready for market.

One other way in which the hog cycle can be smoothed out to some extent is by feeding hogs to heavier weights when corn is plentiful compared to hogs, and feeding them to lighter weights when the reverse is true. Farmers have made much use of this practice in the past and it is possible that it has already been carried as far as it pays to go.

Considering the three possibilities, it seems probable that the hog-price cycle, or at least some variation in hog supplies resulting in variations in corn yields, will never entirely be done away with. With full appreciation of what is happening in the hog market and what is probably going to happen, producers should be able to reach such a balance between storing more or less corn, producing more or less hogs, and feeding them to a greater or less weight as would result in a much more stable production than has been true in past years. This, however, would probably not render production and prices entirely level and continuous. At just what point this adjustment would be reached would depend upon the expense and returns from storing corn, the effect on prices of a more constant production of hogs, and the changes in total returns to pro-

ducers resulting from more stability in the numbers and weights of hogs

Much publicity has been given to the hog cycle and its causes during recent years and it seems that now an increasing number of producers are intelligently controlling the number of hogs they produce. As more and more producers come to recognize the possibilities of increasing their own returns through better understanding of the hog market and better adaption of supply to the relatively constant demand, it is probable that this country's hog production will approach nearer and nearer the condition of ideal balance between corn crops, hog production, and hog weights suggested above.

MORDECAI EZEKIEL.

HOG Price Changes Studied Like other classes of livestock most hogs are sold through the great central livestock markets, and it is at these markets that the central wholesale price is determined. Although there are many of these markets they are in very close touch with each other by wire, telephone, and radio, and as a result the prices move very closely together at all markets, as is shown in Figure 113. This shows that in general the forces which determine the prices at one market are the same as determine the prices at another market, and the significance of the different elements in these forces may be stated in a general way for all markets.

The greatest cause of changes in hog prices in the past 10 years has been the changes in the value of the dollar. For example, in 1919, $1 would buy only about one-half as much as it would in 1913 and in 1926, $1 would buy only about two-thirds as much as in 1913.

In ordinary times the greatest changes in hog prices are caused by changes in the supply of hogs. In the past the market has got its idea of the supply of hogs principally from the actual receipts of hogs. In recent years, however, the Department of Agriculture has been making semiannual pig surveys, which give advance information as to how many hogs will come into market within the next few months. It now seems that the market is beginning to pay attention to these surveys as an advance estimate of supply.

Daily Supply Only One Factor

With some products, like peaches or strawberries, the supply is so perishable that each day's supply must be disposed of almost as fast as received. For such products it is therefore largely the daily supply which sets the price. In the case of hogs, however, it takes several days or weeks to slaughter, pack, and distribute the products to the retail markets, while various fresh or cured products may be kept in cold storage for weeks or months. For that reason daily changes in supply do not have so great an influence on prices as do changes in the general supply over a considerable period. The number of hogs marketed during a period of a half year or so thus has more to do with the general level of prices during that period than does the supply during any shorter period such as a day or week. In general, an increase of 10 per cent in the quantity of hogs marketed

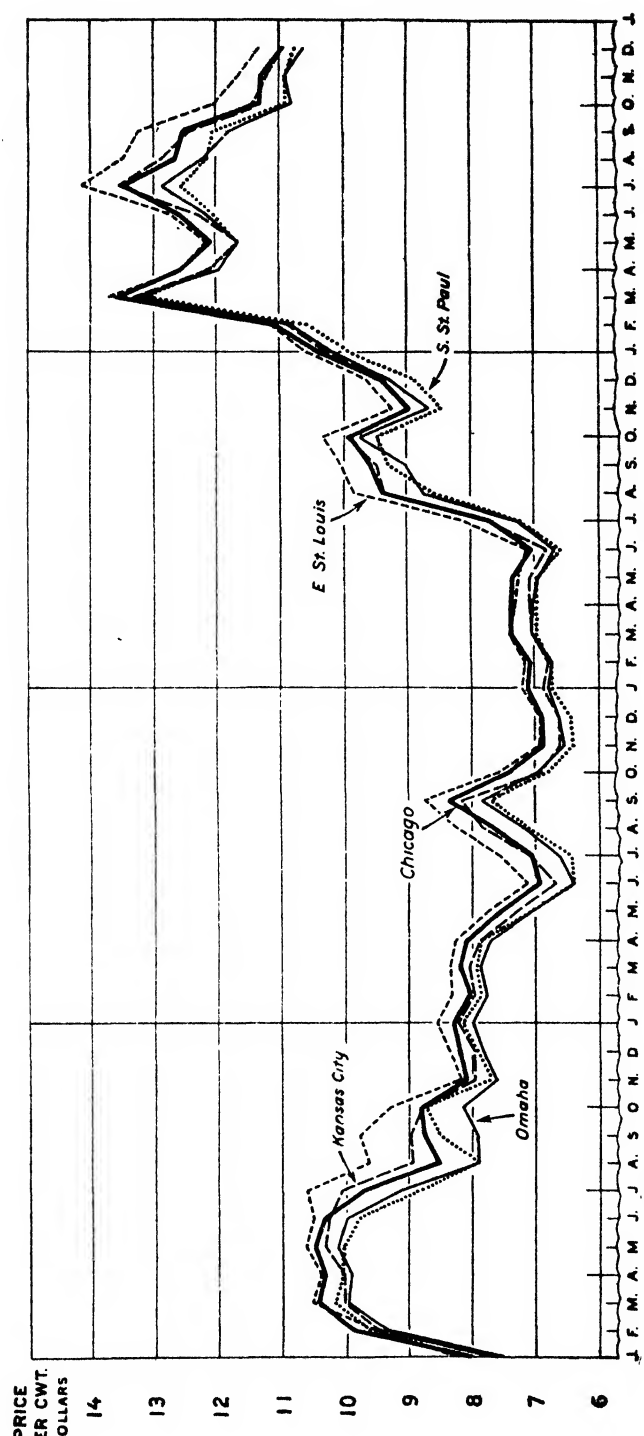

FIG. 113.—Monthly average prices of heavy hogs, medium to choice, at five markets

over a given period tends to reduce prices during that period about 6 per cent.

The demand for hogs depends upon a number of different factors. One of the most important of these is the supply of beef and other meat products which may be substituted for hog products and the prices of these other products. Another very important factor on the demand side is the strength of the demand from our foreign customers. The United Kingdom and Germany, in particular, take great quantities of pork products, especially lard. Changes in their demand for these products due to changes in their own supplies of hogs and the competition from other countries, and in the purchasing power of consumers in these countries, must be reckoned with as one of the most important forces in the hog market.

The ability of consumers to buy hog products also varies in this country from time to time as the general industrial activity, number of workers employed, and the level of wages shows changes from periods of active business to periods of dull business.

Supply Factors Predominate

As a whole these demand factors are not so significant as are the supply factors in setting hog prices. In the past the supply of hogs has shown repeated swings every few years, and with the exception of the period of the World War, it is these large changes in supply which have caused the greatest changes in hog prices. The cause of these changes in supply and what can be done towards their elimination are discussed in the article on the possibility of smoothing out the corn-hog cycle (p. 419).

Part of the variation in supply through the year is smoothed out by putting provisions into storage during the months of large supplies and taking them out during the months of small supply. Although this helps to make up for the seasonal variation in supply through the year, it does not help much in years of heavy production, as then storage stocks accumulate to such an extent as to have a weakening effect on the market.

Statistical studies of hog prices have indicated that between 80 and 90 per cent of the changes in hog prices can be mathematically accounted for by the factors discussed. It seems that a certain portion of the remaining changes in hog prices are due to the inability of men in the hog market to foretell properly what will be the changes in supply and in demand during the immediate future and hence the tendency for them to be uncertain as to just what will be subsequent changes in hog prices. Thus during the period from February to July, 1925, hog prices at Chicago for the same grade of hogs swung upward from $11 to $14, dropped back to $12 and then advanced again to nearly $15, all within a relatively short period.

Although it is not possible to say how much of this erratic movement was due to speculation and how much was due solely to indecision on the part of the market, the inability of the market to arrive at a stable price is certainly one factor contributing to the changes in hog prices which must be considered as well as the more basic factors which have been discussed.

MORDECAI EZEKIEL.

HOG Raising by Low Cost Operations Do farmers make more money raising early spring, late spring, or fall pigs? If all of the conditions which limit the production of hogs were constant throughout the year, it would be as easy and as profitable to produce and sell hogs at one time of the year as another.

But these conditions change normally with the seasons. Consumers eat pork products more readily in cold than in hot weather. Therefore, if demand alone is considered, prices should be high in the winter and low in the summer. But the supply of hogs coming to market during the winter is so great that the price is low in spite of the greater demand, or keener appetites of consumers. The price of hogs varies from month to month in accordance with conditions affecting the demand for and the supply of hogs.

What Are Costs?

Even though the price is lower, the supply of hogs is greater during the winter because the obstacles or difficulties encountered in their production are less than those encountered in raising pigs for a summer and a fall market. These obstacles to production are costs. The price of feeds, especially corn, varies with the season and affects the cost of hogs accordingly. More equipment and labor are required in caring for them at some seasons than others. Seasonal climatic conditions influence the death rate among pigs as well as their rate of gain. When pigs do not do well, the feed required to make a pound of gain increases.

When everything is considered—the price of hogs, the seasonal difficulties of production, the quantity of corn to be marketed, and many relationships between the hog enterprise and the entire farm as a unit—it may be almost as profitable to raise one class of pigs as another. The following outline contrasts some of the factors which tend to equalize hog profits throughout the year.

Factor	Early spring	Late spring	Fall
Price of hogs	High	Low	High.
Cost of production	do	do	Do.
Price of corn	do	do	Do.
Old or new corn	Old	New	Old.
Death losses before weaning	Heavy	Medium	Light.
Death losses after weaning	Light	do	Heavy.
Use of pasture	Minimum	Maximum	Minimum.
Daily gains	High	Medium	Low.
Usual finished weight	Light	Heavy	Light.
Necessary housing	Excellent	Fair	Good.
Necessary labor	High	Low	High.
Pressure of other farm work	Light	Heavy	Heavy.

Follow a System

Various combinations of the one and two litter systems, early or late farrowing, and full or limited feeding are used in raising hogs. A farm organization with a relatively small quantity of corn for hog feeding would probably be most profitable if the hogs were fed to lightweights. Large farms with large quantities of corn for feeding will usually feed heavier hogs as it is usually impracticable to increase the hog enterprise in proportion to the corn enterprise.

Larger herds of late spring pigs than early spring pigs can be handled since the weather at farrowing time is more favorable. The production of fall pigs greatly increases the size of the enterprise and makes a more economical use of the breeding herd. A system should be followed closely. The pigs should be ready for market on schedule time. Early spring pigs which have missed the fall market usually lose because of their higher cost as well as a lower price during the winter. If the prices of feeds and hogs warrant it at the time the pigs are finished, feeding may be continued to heavier weights. The following outline compares the significant features of the one and two litter systems of hog production:

System	Class of pigs	Time of farrowing	Rate of feeding	Finished weights	Time of marketing
				Pounds	
One litter	Early spring or	February-March	Full	200 or less	September-October.
	Late spring	April-May	Medium to full.	200 and up	December-March.
Two litter	Early spring and	February-March	Full	200 or less	September-October.
	Fall	September-October	Full	200 and up	April-June.

How to Reduce Costs

Select good breeding stock which have the capacity to make good gains.

Give the hog a chance to live and grow by providing sanitary living quarters.

Give the brood sow enough feed and care to properly develop her unborn litter. It is good economy to increase the cost per sow if necessary, to produce large, strong, healthy litters.

Wean large litters and thereby reduce the cost of the weanling pig.

Keep the pigs growing. Full feeding is the most economical in making gains. Future prices of feeds and hogs may warrant limited feeding until that time is reached. But a stunted pig seldom catches up.

Provide good pastures for sanitary purposes, to stimulate growth, and reduce feed requirements.

Develop a system of raising hogs with convenient arrangement of hog lots, houses, and feed and water equipment. This reduces labor costs and provides better care for the pigs.

Don't capitalize your hog profits in too expensive hog houses and equipment.

Increase the rate of turnover in your hog business by maximum gains.

Oscar Steanson.

HOME Industries for Farm Women and Girls Numerous More than half a million country homes were remodeled, improved, or beautified in 1926 through the returns from home industries carried on by women and girls enrolled in home demonstration clubs. Where these women and girls have become interested in profitable productive work more of the raw products of the farm are being refined or manufactured at home, thereby giving the farm family more of the

profits on many crops. Hundreds of women have succeeded in establishing profitable canning and preserving plants which had small beginning in home kitchens. Large quantities of fruits are canned or preserved in a thin syrup in 10-pound tin cans or other large containers to be held over until a less busy season of the year, when they are made into finished preserves as orders are received. Fruit juices are bottled for jelly making. Different kinds of vegetables are cured in kegs of brine during the rush season at harvest time and made into finished relishes or other pickled products as needed. Quantities of garden herbs are also dried and made ready to mix into kitchen bouquets for home use or for sale as the demand arises.

Materials on the farm are gathered, cured, and stored away for work during the long evenings of the winter months. Supplies of

FIG. 114.—Farm woman displaying some of her specialized canned products

cured pine needles, honeysuckle vines, oak splits, etc., are stored by basket makers. Dyed, cut, and sewed strips of rags are prepared and rolled in huge balls ready for braiding or weaving into rugs. Clean feathers are put up by the fan makers. Hides and skins of animals are cured and tanned and a supply of leather made ready for another fireside industry. One of the unique specialties developed was pine-needle tapestries of Indian design. The woman originating this specialty last year sold some of these pieces for $50 each and a single tapestry suitable for a table top brought $1,500.

Cooperation is a Result

Successful beginnings in home industries made by individual women naturally lead to the formation of cooperative marketing organiza-

tions to market high-quality standardized home products. The success of women and girls in home industries has been due (1) to economical production, (2) standardizing products, and (3) cooperative marketing with neighbors. The local club market has been the most significant development in this field. Club markets have been organized and conducted by many of the home demonstration clubs. This market is usually located in the nearest town that offers a natural market for the members of the club and is managed by them. All kinds of raw material and refined home products are sold in these markets including fresh fruits, vegetables, meats, butter, eggs, cheese, honey, canned goods, smoked and cured meats, flowers, and bulbs. The total value of products marketed at these club markets in 14 States under the guidance of 114 home demonstration agents in one year was $1,008,568. In Georgia, South Carolina, and North Carolina alone in 1925 the total value of products sold through the club markets was $705,717.

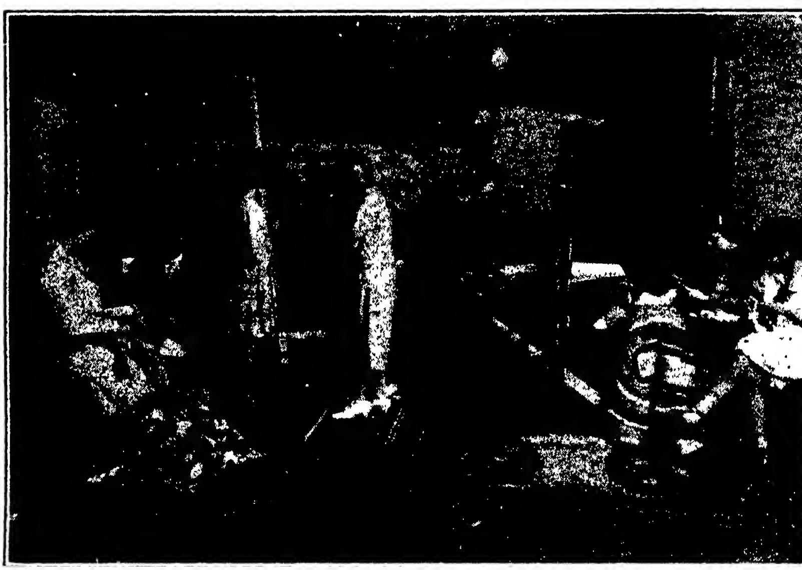

FIG. 115.—Home demonstration agent showing farm women and girls how to make rugs

In addition to club markets, in many States county commodity marketing organizations have developed as subdivisions of the county home demonstration councils. Special products are standardized for sale by the members of these county cooperatives. Some associations maintain a salesroom for their goods and they have their own printed stationery and folders illustrating and describing the special article which the organization has for sale. Examples of such associations are county weavers, pine craft, basket makers, and handicraft associations.

Members of the county weavers' associations in Arkansas and Tennessee standardized certain sizes and patterns for rag rugs and also their recipes for mixing dyes in order to obtain good uniform colors for use with a few selected designs on which members of the associa-

tion are specializing. Some of the members are making braided rugs, some woven, and others the hooked rugs. The rug making association in Hamilton County, Tenn., expanded its business to such an extent that it became necessary for them to procure materials and supplies in larger quantities than could be found at home. With the aid of the county home demonstration agent, arrangements were made to procure the surplus waste from hosiery mills and other factories located in the county. The total sales on rugs in this county amounted to $4,000 in 1925, as compared with $500 worth sold in 1921. Orders for rugs were received from 10 different States. About 100 women are working members in this association.

Handicraft Association Shipments

County handicraft associations in the northern counties of Mississippi and pine-craft associations in the southern section of the same State standardized for sale certain patterns of baskets made from native materials. Shipments were made regularly to florists, gift shops, candy manufacturers, grocers, and others. One year the sales from baskets made from wild honeysuckle vines and pine needles by women and girls in Mississippi totaled $12,000. Women in about 46 States are making baskets under the guidance of home demonstration agents, utilizing many different kinds of native materials, including willow, pine needles, honeysuckle vine, wire grass, bulrushes, corn husks, iris leaves, buckbush, and white oak splits.

In a number of States each year a large portion of the fig crop is wasted because the fruit can not be shipped satisfactorily in the fresh state. Fig clubs have been formed for the special purpose of canning and preserving figs for sale. In Alabama 12 members of the Dallas County Fig Club, in spite of a poor crop season, had ready for market 500 dozen standard containers of fig preserves beautifully packed and labeled with a special Dallas County label. The use of this label added to the attractiveness of each package. The value of the output was $1,225 and more orders were received than could be filled.

Another group of 100 women from Georgia worked together to standardize a high-grade commercial pack from the by-product of a field crop. Uniform containers were purchased in quantity by county home demonstration councils and each of the 100 women agreed to pack 1 dozen jars of watermelon rind preserves. The pieces of rind were cut uniformly so that exactly 12 pieces would fill an attractive 12-ounce jar. The same recipe was carefully followed by each one and any jar taken at random from the lot was an exact duplicate of the others. When the entire 100 dozen jars were assembled in the main aisle of a grocery store they presented a beautiful exhibit. Each woman was as proud of her work as if she had packed the whole lot of 1,200 jars. The 100 dozen were all sold in one day and netted the women a 50 per cent profit. In addition, the advertisement this sale gave to their high-quality products brought to these women orders not only from this store but also from other business concerns, club houses, and hotels for as much as they could pack during the next season.

In many States the women and girls have sold unique farm home products successfully. Some of these women have specialized and standardized for marketing beautiful and useful articles made of feathers from the farm flocks. In other States women have made gloves and other articles from the hides and skins from animals butchered or trapped on the farm. Large numbers of purses, bags, desk sets, book covers, wallets, and bill folders of attractive durable patterns have been designed, tooled, and made from calfskins. The young calfskin untanned sells for 35 to 50 cents, but often there is no market for such skins and they become a waste product of the farm. In cooperation with interested farm women, extension agents

FIG. 116.—Members of home demonstration club making baskets for cooperative sale

have demonstrated that between $60 and $75 worth of tooled leather articles can be made from one calfskin.

Leather Work Popular

So popular has some of the work with leather become that county officials in different States granted their home demonstration agents leave of absence with salary for from three to four months for the purpose of undertaking with selected groups of agents intensive courses in glove making and other leather work in England and France. More than 20 home demonstration agents, representing 9 or 10 different States, have had the benefit of such study and travel in Europe and are now giving to the women and girls of their counties the benefit of their knowledge gained through these courses.

When the finished product of these home industries are of the highest grade and show skill and perfection in workmanship they meet a ready demand and bring good prices. The wholesome interest which has been aroused among women and girls in the profitable

utilization of farm resources by extension workers has resulted in increasing each year the number of women and girls who find greater satisfaction and contentment in living in country homes.

OLA POWELL MALCOLM.

HOME Life on the Farm The last 10 years have seen revolutionary changes within the farm home in the United States. Good roads, transportation, mechanical inventions, and improved service of the press and educational agencies have been as important factors in improvements in the home as they have been in the well-recognized improvements brought about in American agriculture.

Probably the most important change made within the home has been in the thinking of the farm woman. She has come to recognize satisfying home making as her objective rather than simply efficient housekeeping. She has found that rest and recreation are needed for all members of the rural family if their duties are to be performed more efficiently, and if their life is to be satisfying. She has become conscious of the necessity of procuring efficient tools for her work and of obtaining scientifically accurate knowledge regarding adequate methods of caring for the physical well-being of her family. She has developed a keen desire to make the home beautiful within and without, to developing correct habit formation in her children, and to make the home and community a place of satisfaction and pride to all concerned.

This viewpoint has developed rapidly, particularly during the past five years. Rural women in all sections of the country have begun to meet regularly in small groups to obtain the desired information, and to enjoy the satisfaction of group discussion and of social contact thus afforded.

Farm Surroundings Improved

The results of such activity by farm women and the resultant effort is in evidence on every hand. The yard and fences about the house have been put in orderly condition and a well-designed scheme for using grass, trees, flowers, and shrubs has made of the farm home a place of beauty.

The interior of the farm home has been made equally attractive. Simplicity, usefulness, and beauty have been made the keynote of selection and arrangement of house furnishings. Family recreation and music have been planned for in many homes. Such an atmosphere in the farm home has made rural children love their home and think of it as a place of satisfaction rather than one from which to go to seek pleasure elsewhere.

Through increased efficiency in the performance of necessary duties the farm woman has gained time which she has learned to use constructively. She has had more opportunity to study her mode of living and its possible improvement. She has been able to give more time to rest and recreation, to training her children in correct habits of acting, speaking, and thinking, to companionship with her husband and friends, and to carrying out her responsibilities as a member of the community.

The farm family has become more satisfactorily clothed. Clothing has been economically purchased. Becomingness, appropriateness to needs, and hygienic properties have been considered in its selection. Clothes have been made with less consumption of time and energy. The family has been more attractively dressed and has possessed that sense of poise and of satisfaction which comes from such knowledge. This has helped to overcome self-consciousness, and has encouraged participation in group endeavors and acceptance of a place of responsibility in the community.

Food is More Adequate

The food of the farm family has become more adequate as to desirable quantity and variety. It has been procured more economi-

FIG. 117.—Restfulness and hospitality pervade this farm living room

cally. The more general use of a garden and a canning budget based upon family needs has developed. This has tended to prevent physical ills, and this improved health of the family has made for greater efficiency at work, and increased enjoyment of leisure time.

Unavoidable illness on the farm has been cared for with greater skill and correct methods, and the healing processes have been accomplished with satisfying results and with less delay.

With her husband, the farm woman has studied the family income and the type of life desired for the family. They have come to use greater discrimination in the use of their income, so that desired objectives may be realized more surely, either immediately or over a period of years.

The farm woman has come to see more fully her opportunities and responsibilities in the community. She has come to regard the community as a modern day extension of the home. Through her vote and personal activity she has promoted better services in schools, churches, public health, recreation, merchandising wares, public office, and the like. She has helped increasingly to promote civic pride through bringing about beauty in the community environment.

During the decade just past many thousands of farm women have come into this larger consciousness of the importance of the farm home and of their opportunity in serving it and the rural community. Each year the number has increased of those who have joined with their neighbors in setting up wholesome standards of rural family life, in obtaining helpful information, and in checking improvements made. The growth in vision and abilities of these women has been the outstanding result of this group endeavor. They have intelligently evaluated the possibilities in home making, in community life, and in citizenship. They have set up goals of desired accomplishment for themselves in relation to each of these factors.

Aided by Extension Workers

On this forward movement, farm women have been aided to a large degree by the State and county home demonstration agents and home economics specialists of the cooperative extension service of the United States Department of Agriculture and the State agricultural colleges. Through these extension workers there has been made available in a practical form the results of home-economics investigations by the State agricultural colleges, the Bureau of Home Economics of the Department of Agriculture, and other institutions and agencies contributing to the science of home making. In addition, these extension workers are helping farm women to assume intelligent leadership in all affairs having to do with promoting economic and social well-being in rural home and community life.

At present approximately 1,000 county home demonstration agents and 300 home economics specialists are aiding farm women in this constructive undertaking. The demand for this type of leadership is steadily increasing.

By the hundreds of thousands farm women have accomplished these changes in their thinking and in their home conditions. By the tens of thousands they have given volunteer service in interesting their friends and neighbors in like undertakings. In addition they have given time and energy to receiving practical training in these fields from technical experts and have voluntarily aided their neighbors to become equally skillful in these lines. In 10 years farm women have become more conscious of the possibilities of satisfying life on the American farm. The results accomplished point to marked further development in the future in the interested and efficient conduct of daily tasks, the intelligent and constructive use of leisure, and in making of the rural home and community places affording greater beauty and satisfaction to those who live in them.

GRACE E. FRYSINGER.

HONEY Market Reports Now Issued

Like other salesmen, beekeepers who have honey to sell need market information in order to dispose of their crops to the best advantage. It is to their advantage to know at what price other beekeepers in competing sections are selling honey of the same flavor and grade. They are interested, too, in hearing of the condition of bees and honey plants in other areas, so that the probable size of the crop in different regions, with its effect on prices, can be known.

Information of this sort can be found mainly in three sources: (1) Letters put out by honey buyers, (2) discussions in the bee journals, and (3) the honey market news reports issued by the United States Department of Agriculture. Of these the Government reports are easily the most comprehensive, and several journals now copy

FIG. 118.—Working with bees in Iowa. Honey house in center of picture

them in whole or in part, instead of obtaining market information themselves.

The market news reports published by the Bureau of Agricultural Economics have been issued for nearly 10 years. At present reports are prepared on the 1st and 15th of each month, at Washington, D. C. only. No charge is made for the bulletins, and they will be sent to any beekeeper upon request.

The first two pages of each report are devoted to news from the important producing sections of the country. A large number of beekeepers and honey shippers, from Vermont to Washington and from Minnesota to the Gulf, send the department, twice a month, statements of prices and crop and market conditions prevailing in their sections, with other news items of interest. These are combined and published by sections such as "Intermountain region," "Northeastern States," "Texas," etc. The cooperation of other large beekeepers in furnishing reports would be welcomed by the department.

These price reports from producing sections are confined chiefly to the sale of comparatively large lots of honey. Most of the extracted prices refer to 60-pound cans, although, especially in sections where most honey is sold in small pails, sales of 5 and 10 pound pails are also recorded. Sales of comb honey are on the basis of the glass-front case holding 24 sections. Prices on chunk, or bulk comb honey are also obtained in Texas.

Prices and Local Conditions

Prices and local conditions in leading city markets appear on the third page of the report. Boston, New York, Philadelphia, Chicago, Minneapolis, St. Louis, Kansas City, Denver, and San Francisco are all reported on at this time. In these cities salaried representatives of the department call upon the leading receivers and dealers and obtain the prices at which bottlers, confectioners, bakers, and wholesale dealers can buy extracted honey, in 60-pound cans or barrels, and the price obtainable for comb honey when sold by large receivers to retail grocers. Prices are obtained on all flavors and grades which are on the market in any quantity. Quotations on domestic and imported beeswax are also obtained in some cities.

In order to reply to requests which are frequently received by the department, address lists have been compiled of leading honey dealers in over 20 of the important markets. No pretense of completeness is made for these lists, but they are probably more accurate than any other similar register ever compiled. These names will be furnished to beekeepers on request.

Millions of pounds of honey are shipped to foreign countries every year. As an indication of the countries most interested in American honey, import and export statistics are published in detail once a month as a feature of the market news report, and twice a year total figures for the preceding 12 months are tabulated and published. Consular articles dealing with bee and honey interests in foreign countries and the possibilities of selling American honey in those countries, are occasionally obtained through the Bureau of Foreign and Domestic Commerce of the Department of Commerce and published in the market report.

HAROLD J. CLAY.

HONEY Grades Set Aim for Beekeepers The standardization of food products is a necessary outgrowth of modern business methods and the wholesale transportation and marketing of such products. Realizing that honey also must be standardized, the division of bee culture investigations of the Bureau of Entomology, in cooperation with the Bureau of Agricultural Economics, has established standard grades and grading rules for both comb and extracted honey.

The Federal standards have unified the various grading rules already in use so that a grade name for color or finish when applied to honey anywhere in the United States will mean the same thing. Only thus can producers and consumers meet each other satisfactorily.

Our foreign trade in honey is now about 8,500,000 pounds annually. This should increase largely through the use of uniform, standard grades. If any foreign purchaser, in buying honey, specifies that it shall be graded according to United States grading rules for honey, he can be assured that he will receive such honey as he orders and that it will be of good quality.

Two chief commercial grades of comb honey are specified. It is expected that 25 to 40 per cent of the honey produced in the best commercial practice will grade as U. S. fancy, the remaining 60 to 75 per cent of commercial honey grading as U. S. No. 1. A variable percentage, depending on the season and on the skill of the producer, will grade as No. 2 and should be sold on local markets instead of being shipped. Provision is also made for special grades for particular purposes, such as export and exhibition grades. Color is also considered in the grading, and there may be a fancy grade of amber or of dark honey as well as of white honey.

In extracted honey, fancy and No. 1 grades are also provided, with a range of color division comparable to that for comb honey. The chief difference between U. S. fancy and U. S. No. 1 extracted honey is in the clearness, fancy being ready for sale direct to the consumer, while No. 1 is a product to be sold to the bottler, and contains particles of wax, etc., which must be removed before it will class as fancy honey. A No. 2 grade is also provided for extracted honey which does not come up to the standards required for fancy and No. 1.

It is impossible, on account of the great diversity in character of honey marketed, to make grades to fit exactly the needs of each producing area, but it is believed that beekeepers can adapt their methods of management reasonably to meet the standards of the grades.

It is necessary for the beekeeper, as for any other producer of commodities, to set a standard for his merchandise, and to plan his management so as to produce honey that will grade well. The Federal grading rules provide a standard which will obtain for the beekeeper the best financial returns from the accepted best commercial practice in beekeeping. The beekeeper should study each detail of production and adjust his methods so that the nectar gathered from the flowers by the bees may be made by them into the largest possible quantity of the most salable honey. Often some fairly good method must be discarded because it results in too large a proportion of a product that does not meet the grades. As competition becomes more keen, methods of production must be improved so that the honey obtained from the bees may be equal in grade to that of competing producers.

Many beekeepers are now working in this way and are financially successful. They do not merely produce a crop of honey and then grade it according to Federal standards, but they have the standards in mind while managing the season's work and thus succeed in obtaining the largest proportion of fancy and No. 1 honey possible for their locality. By the use of good beekeeping methods, the required grade of honey can be produced profitably.

E. L. Sechrist.

HORSE Production Falling Fast in U. S. The demand for horses for farm and city work has fallen rapidly since the close of the war in 1918. The automobile and auto truck have made the horse-drawn vehicle of relatively little importance in city streets and even on country roads, while the tractor has replaced some of the work stock on a great many farms. With the improvements that are being made in tractors, it is difficult to foresee the extent to which tractors will eventually replace horses on American farms, but it is not likely that the horse will ever be entirely displaced. At least one team will be necessary on most farms.

The decreased demand for horses in cities and on farms has resulted in a decrease in horse values of more than 35 per cent from 1918 to 1924, with continued low values since. In fact horses were worth relatively less in 1926 than at any other time in the past 60 years. With the sharp drop in demand and the rapid falling off in the values of horses came a startling decrease in the number of horse and mule colts foaled in the past seven years. While the number of horses and mules over 2 years of age decreased about 6 per cent from 1920 to 1925, the number of colts under 2 years of age decreased 51 per cent. The census of 1925 showed 73 colts under 2 years of age per 1,000 horses and mules of all ages, as compared with 132 colts in 1920, or a reduction of 45 per cent in the ratio.

Reports from Crop Correspondents

Reports from farms of crop correspondents show that 41 horse and mule colts were foaled during 1925 per 1,000 head of all horses and mules on their farms January 1, 1926, as compared with 91 during 1919 per 1,000 head of all horses and mules on farms January 1, 1920. Unless more colts are raised in future years than were raised in 1925, either the number of horses and mules on farms will eventually fall to approximately one-half the present number on farms, or their average life must exceed 15 years.

While this downward trend in colt production continued unabated in the South Central States and the range country, an increase in the number of colts foaled in 1925 over 1924 was shown in the Corn Belt and Northeastern States. Most of the States where surplus mules are produced showed a decline in the birth rate of colts during 1925 as compared with 1924—Missouri showed a decrease from 54 to 46 colts, Kentucky from 40 to 35, Texas from 47 to 36, and Oklahoma from 49 to 45; only Kansas and Nebraska showed an increase.

Without colts and young horses to replace our present number of work animals the number will fall off rapidly during the next few years. The number of horses and mules on farms since 1910 and the outlook for the next five years is shown in Figure 119. A reduction in the number of work animals on farms of 30 to 40 per cent within the next five years is practically inevitable. This rapid reduction will first develop into an acute shortage in those States where the horses now on farms are the oldest and where there are fewer colts coming on as replacements, and where the topography of the country, the character of labor available, or the type of farming followed make the use of tractors less satisfactory than in other parts of the

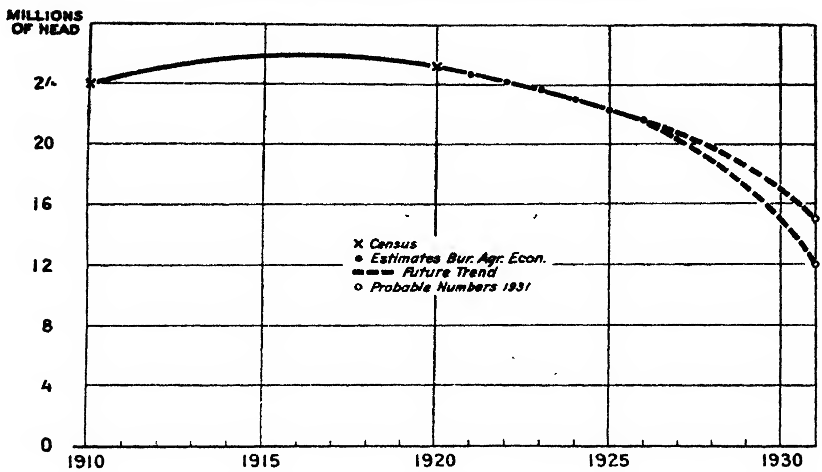

FIG. 119.—Number of horses and mules on farms in 1910 and 1926, and estimated number in 1931

country. Figure 120 shows that on the farms of crop correspondents in February, 1926, there were more horses over 10 years of age in the Northeastern and Southeastern States than elsewhere. The Southeastern States have the largest percentage of mules over 10 years of age.

Replacement Effected in Far West

Neither of these sections raises as many colts as the Middle Western and range States. These are also sections which are not as well adapted to tractor farming as are the broad plains of the Central States. Only in the far Western States are the present number of colts anywhere nearly sufficient for replacement purposes.

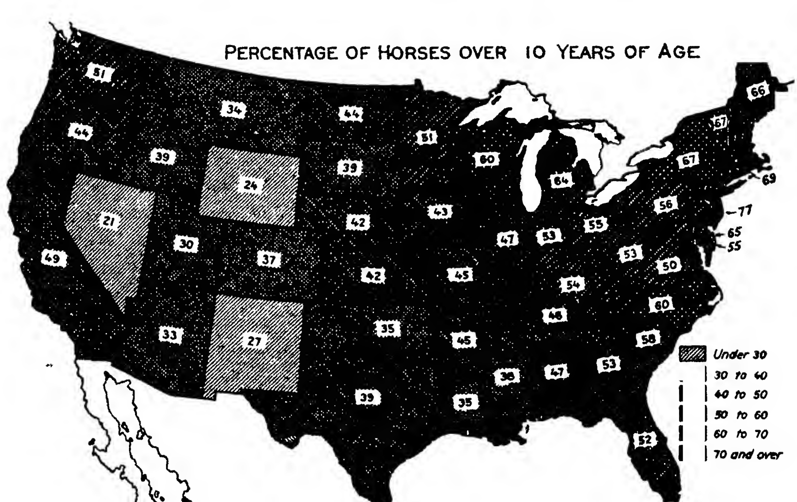

FIG. 120.—There are more horses over 10 years of age in the Northeastern and Southeastern States than elsewhere. Only in the western range States are the present number of colts anywhere nearly sufficient for replacement purposes

The individual farmer should study carefully the type of power best suited to his own farm and plan now for the necessary horse and mule replacements 3 to 10 years hence. Present low prices for horses may be expected not to continue indefinitely. The average value of horses on farms has not changed much for the past three years although the average age has increased considerably.

C. F. SARLE.

HOSPITALS for Agricultural Communities What farm family would not welcome the assurance that in case of serious injury or sickness an ambulance would appear on call at their home and take the patient to a near-by public hospital for treatment; that superior medical and surgical skill, including that of their own family physician, and aided by modern medical appliances would be at their command; that sympathetic trained nurses, drawn from the home community, would care for them; that friends and family could make daily visits to the patient?

This is becoming a reality as public hospitals, long considered a necessity by city people, are being erected in rural communities with financial assistance of farmers themselves.

A recent rural hospital survey by the Department of Agriculture[7] has revealed a growing movement in the establishment of such public hospitals and has disclosed a variety of types.

Twenty States have recently enacted legislation facilitating the erection by taxation of hospitals by rural counties. Establishment is by the regular county legislative body usually after popular vote, the law generally specifying a maximum tax rate of 2 mills on the dollar, which in practice is often much less.

Cost figures run from $30,000 to $250,000. Maintenance expenses are met largely from the hospital receipts; deficits, if any, from taxes. Government is through a board appointed by the county governing body or elected by the people.

Jefferson County, Iowa, population 16,440, erected a $43,000 25-bed hospital at Fairfield in 1912 (fig. 121) and later a nurses' home which cost $15,000. Bonds voted by people, $27,000; cash donations for building, $7,982; equipment donations, $8,000. Hospital earnings, 1923, $20,776.68; expenses, $24,666.96; deficit, $3.890.28. Average 11-year deficit, $3,289.74. Number of patients in 1923, 746; one-half farm people. Receipts from county taxes, $7,726.60. Tax rate, 1 mill, which was one thirty-seventh of the total county tax. Country patients are conveyed in the hospital ambulance.

McPherson County, Kans., population 21,845, built by popular vote through taxation, a modern 50-bed hospital plant costing $250,000, which, in 1924, had 828 patients. It maintains a training school for nurses and 18 additional employees.

A Successful County Hospital

A variation of the type is the County Home Hospital at Urbana, Ohio. The county built a public hospital adjacent to the county infirmary which has proved very successful. It more than maintains

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[7] NASON, WAYNE C. RURAL HOSPITALS. Farmers' Bul. No. 1485, 48 pp., illus., 1926.

itself, as the same superintendent, engineer, matron, and other help are in both institutions, and the same heating, lighting, and refrigerating plants, water system, kitchen, etc., are used.

A 45-bed hospital costing $109,000 was built, in 1923, at Shelby, N. C., with a population of 3,609 and a township population of 8,409, by popular bond vote. Operating expenses in 1924 were $22,882.76 and receipts, $22,682.40. Daily average of 20 patients, one-third farm people.

Three Rivers, Mich., took over a private hospital, the people voting a maximum maintenance tax of 1 mill. Waseca, Minn., population 3,908, in a farming community, voted bonds and erected a $63,000 soldiers' memorial public hospital accommodating 26 patients. Citizens subscribed $8,000 to furnish rooms.

FIG. 121.—The modern county hospital at Fairfield, Iowa

Ohio solved the difficulties surrounding the union of several political units for public-hospital taxation by special legislative enactment. Whereupon the people of four townships and one village in two counties, with a population of 9,569, voted a 0.75-mill tax for 10 years for construction and maintenance and, supplemented by $65,000 subscribed by 3,500 people, built a $130,000 public hospital of 30 beds at Berea. Government rests in a board of trustees, including representatives from each political unit, six of them farmers.

Community Hospitals

Rural people form community hospital associations and, through stock sales or public subscriptions, finance such hospitals. At Montevideo, Minn., then a town of 3,056 population in a county of 14,158 population, a community hospital association was formed with

650 stockholders, one-half farmers. A $40,000 hospital was built which is out of debt and financially self-sustaining. (Fig. 122.) Of its 627 patients in 1924 three-fourths were farm people.

At Creston, Iowa, a $200,000 "greater community hospital" of 50 beds was erected with money from 1,000 subscribers, a farmer giving $25,000. It serves 100,000 rural people in eight counties, has subsidiary governing units in each county, is open to all doctors, is self-supporting, and owned by the greater community. It is controlled by a hospital association which elects a board of trustees which in turn elects an immediate control executive committee, three of them farmers. Of the 1,402 patients in a recent year, one-half were farm people. The average cost of hospitalization per patient per day was $4.23. The proponent of this hospital was a country doctor who felt unable to practice medicine properly without a hospital, the nearest one being 60 miles distant by rail.

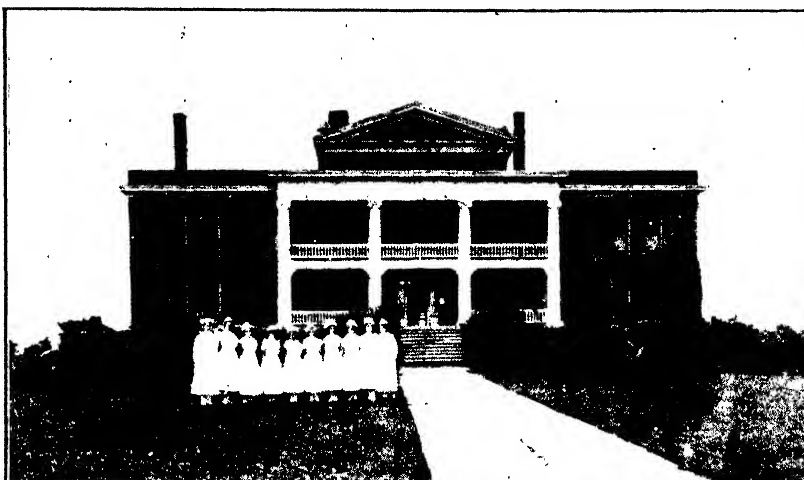

FIG. 122.—Community hospital and nursing staff, Montevideo, Minn.

The farming community of Sandy Springs, Md., organized an association and erected a $65,000 hospital financed by the sale of stock to 350 stockholders, $39,297; public subscriptions: and a loan. From the opening, February, 1920, to October, 1926, 2,301 patients, mostly farm people, were treated.

Community-Private Hospitals

A less populous and wealthy community sometimes forms an association and finances a hospital in conjunction with a private party, perhaps a physician. At Addison, Mich., a farming village, the physician furnished the building and the association equipped it.

A doctor-community type is also found at Forney, Tex., population 1,345, where a hospital became necessary in order to retain local physicians. A corporation of 80 people, including 60 farmers, through stock sales erected a $30,000 institution. The doctors furnished half the stock and rented quarters in the building. Hos-

pital, profits averaging $2,000 yearly, none of which accrue to the doctors, have gone into the plant, including a new home for nurses. Four-fifths of the patients are farm people.

Philanthropic people have done considerable in the establishment of hospitals among the backward and neglected old American stock inhabiting a southern mountain region. Holman Hospital at Altapass, N. C., is a personal achievement. A trained nurse from the North, after 20 years of health service among these people, has seen her work rewarded by the establishment of a hospital with a physician in charge, erected with the help of philanthropic people and appreciative local labor.

Rates at Hospitals Surveyed

In the hospitals surveyed rates for general care and nursing vary from $2 to $3.50 per day for ward beds and from $3 to $6 for private rooms. Some hospitals employ graduate nurses; others maintain training schools. A women's auxiliary is often effective assistance. In communities with hospitals there was an adequate supply of young progressive physicians sympathetic toward rural people.

Most of these rural hospitals give service comparable to city hospitals at lower rates, thereby filling a distinct need for rural people.

WAYNE C. NASON.

INCOME from Agricultural Production

Changes in farm prices alone or in farm production alone do not measure the current economic well-being of the agricultural industry. When it is desired to appraise the condition or progress of any industrial enterprise, it is customary to examine not its prices or production alone, but its gross income, its expenses, and its net income, and then to see whether the net income is sufficient to pay the owners of that enterprise a reasonable reward for their capital, labor, and management. Such a comparison may also be made for the agricultural industry as a whole.

The Source of Farm Income

Farm income is derived largely from agricultural production. Some farmers may derive additional income from work in near-by towns or cities, from investments, gifts, or inheritance, but when all farmers are considered as a group, these additional earnings form a very small part of the total. Although farmers derive most of their income from production, their total production does not constitute income. A good part of some crops is fed to animals, or used for seed, or is of nonmerchantable quality. It is only that part of the production which is either sold for cash, or consumed by the farm families that constitutes gross income. The difference between the gross value of all farm production and gross income appears in Table 11. In 1919 about one-third of the gross value of all farm production was used for other purposes than for sale or for farm home consumption; in 1925, about one-quarter. Ordinarily about 80 per cent of the gross income is in the form of cash derived from sales, and 20 per cent in consumption of food and fuel on farms.

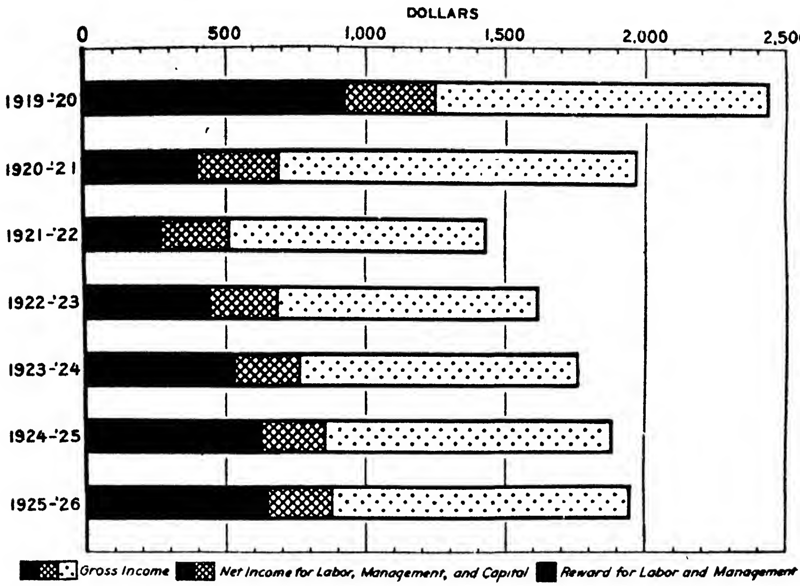

FIG. 123.—Income per farm from agricultural production in the United States

TABLE 11.—*Gross value of farm production and gross income*

Year	Gross value of all farm production [1]	Deductions for products fed, used for seed, and waste [2]	Gross income from farm production		
			Total	Value of food and fuel consumed on farms	Cash income from sales
	Million dollars	*Million dollars*	*Million dollars*	*Million dollars*	*Million dollars*
1919-20	24,025	8,306	15,719	2,887	12,832
1920-21	17,800	5,132	12,668	2,645	10,023
1921-22	12,894	3,680	9,214	2,129	7,085
1922-23	14,909	4,543	10,366	2,168	8,198
1923-24	16,249	4,961	11,288	2,360	8,928
1924-25	17,086	5,083	12,003	2,327	9,676
1925-26	16,847	4,432	12,415	2,524	9,891

[1] These gross values of all farm production are here evaluated in terms of crop year (practically July-June) production and weighted average farm prices.
[2] These deductions, to obtain gross income, cover portions of crops and dairy products fed to livestock, used for seed in further crop production, and waste. For the industry as a whole these deductions constitute raw materials, the income from which is derived from the finished products sold or consumed in the farm home.

Gross Income, Expenses, and Net Income

A large part of gross income from production is paid out in the form of expenses of production, taxes, rent, and interest on mortgages and other indebtedness. The greater the proportion of these payments paid out to nonfarmers, the smaller the net income available for the farmer's own capital, labor, and management. As shown in Table 12, about half of the total income in 1919–20 went to meet the costs of production, taxes and the use of rented land, and borrowed money or credit. During the depression much larger portions

of the reduced income were required for these purposes so that very little remained as a reward for the farm operator's own capital investment, his labor and managerial efforts.

TABLE 12.—*Gross income, expenses, and net income for operator's capital, labor, and management*

Year	Gross income	Expenses of production[1]	Net income for operator's capital, labor, and management
	Million dollars	*Million dollars*	*Million dollars*
1919-20	15,719	7,685	8,034
1920-21	12,668	8,262	4,406
1921-22	9,214	5,917	3,297
1922-23	10,366	6,002	4,364
1923-24	11,288	6,398	4,890
1924-25	12,003	6,559	5,444
1925-26	12,415	6,812	5,603

[1] Includes wages for hired labor, purchases of feed, seed, binder twine, harness, etc., and estimates of cost of operating farm machinery, automobiles, and trucks, upkeep of farm buildings, taxes, rent, and interest paid to nonoperators.

What do the above net incomes available for capital, labor, and management mean, (1) as to the rate of return on investment and capital, and (2), as to the reward for the farmer's labor?

Reward for Capital and Management

There is no adequate way of determining the exact shares of the net income which may be taken separately as the rewards for each of the three factors in production—capital, labor, and management. We can, however, assume that the average farmer is entitled to a reward for his labor equivalent at least to what he pays for hired labor without board. If we make this allowance for all the farmers engaged in agricultural production, and deduct it from the total net income available, after meeting current expenses of production, the balance may be taken as the reward for the capital invested, including reward for management. Table 13 presents the results of such allowances and deductions, with the balance expressed as percentages of the net capital investment of all farm operators. The negative figures for 1920–21 and 1921–22 mean that after paying current expenses, interest, rent, and taxes, the balance not only fell short by $1,720,000,000 in 1920–21 and $797,000,000 in 1921–22 of providing a current wage for the labor of the farmer and his family, but left nothing for return on the capital investment. During the past two years the return for both capital and mangaement has exceeded 3 per cent, but even these returns are considerably below the commercial interest returns and managerial rewards in other enterprises.

In computing the foregoing data on gross and net income, and the rates of return on capital and management, no account was taken of the declining value of capital invested in agriculture shown in Table 13. If allowances were made for the losses sustained by those farmers who were forced to sell on declining land values,

the net income for the industry as a whole would show still greater losses during 1920–21 and 1921–22.

TABLE 13.—*The value of capital invested in agriculture and the reward for the operator's capital and management*

Year	Current value of all capital invested in agricultural production [1]	Current value of operator's net investment in agricultural production [2]	Income available for operators [3]		Reward for capital and management as percentage of operator's net investment [5]
			Capital, management, and labor	Capital and management [4]	
	Million dollars	*Million dollars*	*Million dollars*	*Million dollars*	*Per cent*
1919–20	79, 459	47, 065	8, 034	2, 675	5. 7
1920–21	73, 139	41, 172	4, 406	−1, 720	−4. 2
1921–22	63, 811	34, 711	3, 297	−797	−2. 3
1922–23	62, 549	34, 321	4, 364	419	1. 2
1923–24	60, 472	33, 046	4, 890	520	1. 6
1924–25	59, 743	32, 574	5, 444	1, 039	3. 2
1925–26	59, 778	32, 793	5, 603	1, 137	3. 5

[1] As of Jan. 1 in the period indicated values include land, buildings (dwellings and other), livestock, implements, machinery, motor vehicles, and an allowance for cash working capital.
[2] Total capital investment less property rented from nonoperators and debts owed to nonoperators.
[3] Exclusive of residential value of buildings.
[4] Obtained by deducting a wage allowance for the labor of the farm operator and his family.
[5] Column 4 divided by column 2.

It is to be noted further that the difference between columns 1 and 2 in Table 13 represents the estimated value of property rented from and debts owed to nonoperators, and that the rates of interest paid on this borrowed capital have been at least between 6 and 7 per cent, considerably more than farm operators have earned for their own capital and management. This illustrates the fact that periods of prosperity and depression do not affect all owners of farm property to the same degree. The return on capital invested in farm mortgages, or in farms rented out on a share or cash basis to farm operators, is fairly constant, and, being a primary obligation, is fairly certain compared with the uncertain fluctuations in earnings on the farmer's own capital. It is therefore highly important to observe how agricultural conditions of the past seven years have affected the earnings on the farm operators' own capital as distinguished from the rates they paid on borrowed capital or on rented farms. In making this distinction farm operators may be likened to the stockholders of the farm industry, while the inactive city owners of rented farms and the holders of farm mortgages may be considered the preferred stock and bondholders.

Reward for the Farmer's Labor and Management

The reward for the farmer's labor and management may be computed by deducting from the net income available for capital labor and management, shown in Table 13, a current conservative interest return on the capital investment. The results of this computation, using 4.5 per cent as a reasonable return for the farm operator's capital investment, are shown in Table 14 reduced to a per farm basis.

TABLE 14.—*Reward, per farm family, for labor and management*

Year	Income available for capital, labor, and management [1]	Interest allowance on net capital investment per farm [2]	Reward for labor and management
	Dollars	*Dollars*	*Dollars*
1919-20	1,246	329	917
1920-21	684	287	397
1921-22	514	244	270
1922-23	682	242	440
1923-24	766	233	533
1924-25	854	230	624
1925-26	879	231	648

[1] Net income available for operators' capital, labor, and management calculated on the basis of the number of farms interpolated between 6,448,000 in 1920 and 6,372,000 in 1925.
[2] Interest allowed on operators' net capital investment at 4.5 per cent.

In 1919–20 the income per farm for capital, labor, and management amounted to $1,246, of which $917 represents reward for the farmer's physical and managerial efforts. During the depression these returns were greatly reduced, but in 1925–26 the former amounted to $879 and the reward for labor and management $648.

For a proper interpretation of these earnings per farm operator it is necessary to consider at least the following questions:

How do these earnings compare with wages of hired labor?
How do they compare with wages earned by factory workers?
How have the recent changes in cost of living affected the buying power of the farm operator, farm laborer, and factory worker, and their ability to maintain their separate standards of living of 1919–20?

The answers to these questions appear in Table 15, where the net income (for labor and management) per farm family are compared with farm wages and factory wage earnings by expressing each of these as indexes or percentages of their earnings in 1919–20 (columns 1, 2, and 3), and where each of these series is adjusted for changes in the cost of living (see columns 4, 5, and 6).

TABLE 15.—*Indexes of net income per farm family, farm and factory wage earnings, and of their relative purchasing power*

[1919-20=100]

Year	Net income per farm family [1]	Farm wages without board [2]	Factory wage earnings per person employed	Relative purchasing power [3] of —		
				Net income per farm family	Farm wages	Factory wage earnings per employee
1919-20	100	100	100	100	100	100
1920-21	47	115	104	47	114	103
1921-22	34	77	88	39	89	101
1922-23	51	74	95	60	87	112
1923-24	61	82	100	70	94	115
1924-25	70	83	100	81	97	116
1925-26	72	84	103	81	94	116

[1] Net income for labor and management plus an allowance ($60) for residential value of farm dwellings.
[2] Calendar year averages, 1919=100.
[3] The first 3 columns of this table adjusted for the following changes in the cost of living in the United States for December of each year: 1919, 100; 1920, 101; 1921, 87; 1922, 85; 1923, 87; 1924, 86; 1925, 89.

It appears from this comparison that the farmer's money income was affected by the postwar depression a year earlier and more seriously than either farm or factory wage earnings, that the recovery has been much slower, and that it is still incomplete. Factory wage earnings per person employed fell in 1921–22 to 88 per cent of the 1919–20 figure, equaled the 1919–20 earnings in 1923, and were maintained at that level for the past three years. Income per farm family in 1921–22 dropped to one-third of the predepression income and during the past year, after four years of gradual improvement, reached 72 per cent of the 1919–20 earnings.

Comparison with Other Industries

If these earnings are adjusted for the changes in cost of living in the United States since 1919, it is found that the purchasing power of the average farmer's income during 1920 and 1921 dropped to less than half of what it was in 1919–20, and during the recent recovery, gradually reached 81 per cent of the predepression purchasing power. Farm wages dropped less and can now buy about 94 per cent of the amount of goods and services they were able to buy in 1919. The purchasing power of employed factory workers, on the other hand, has throughout the past six years remained greater than in 1919–20, and during the past three years has averaged 16 per cent above. In other words, the farmer with his net income during the past two years could buy 81 per cent of the things he was able to buy before the depression, while employed factory workers could buy 116 per cent of a comparable amount.

L. H. Bean.

INCOME Data Show Earnings Vary Widely Farm business records available to the United States Department of Agriculture and the agricultural colleges and experiment stations show that some farms in every locality return larger incomes than others from a year's operations. This holds true whatever the type of farming, and whether the year be a good one or a poor one. It is true whether the income be expressed in terms of farm receipts, farm income, or labor income. Farm income, in this connection, means farm receipts less expenses, and labor income means farm income less an interest charge for use of the farm capital.

In all, data are on file in the Bureau of Agricultural Economics from 70,516 farm business records from 450 localities in 45 States and they cover the years 1907 to 1924. Figures 124 and 125 illustrate how labor incomes vary from farm to farm in two localities.

Comparisons should not be made between these two localities as to highest, lowest, or average labor incomes, because unlike economic conditions prevailed during the periods represented. One locality was selected to show variations from farm to farm in a single year; the other, over a period of several years.

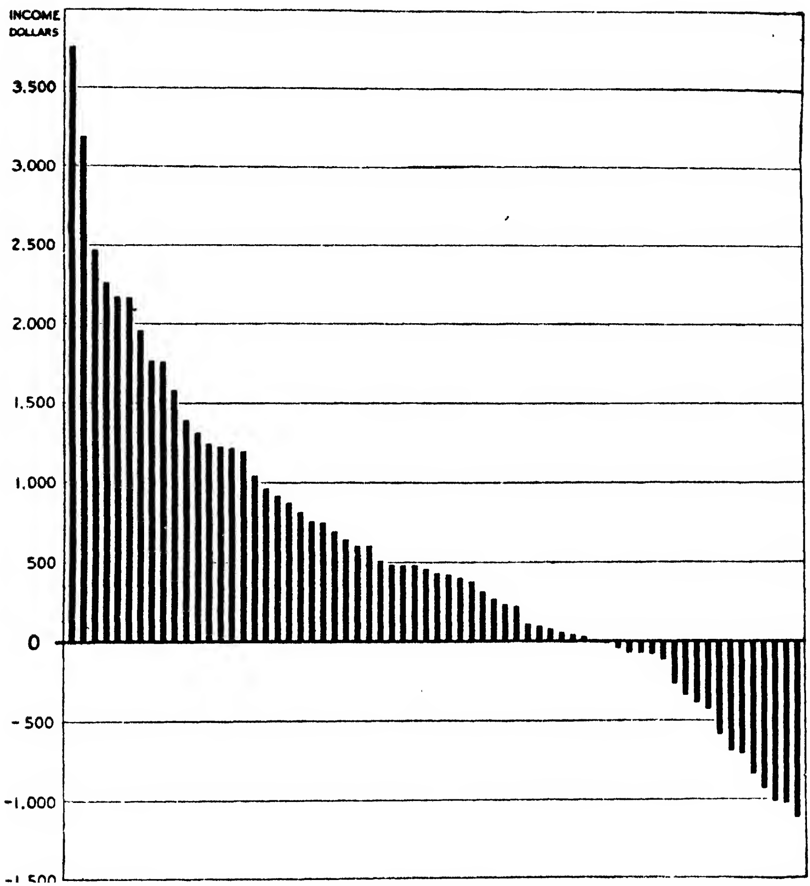

FIG. 124.—How the labor incomes from 65 wheat and dairy farms near Middletown, Del., varied in 1924. The highest labor income was $3,761, the lowest —$1,122, and the average $554

Results by Groups

By grouping a large number of the farm business records by labor incomes and into periods of different economic conditions, the labor incomes were:

Over $2,000 from—
- 4.5 per cent of the farms from 1910 to 1915,
- 15.8 per cent of the farms from 1916 to 1919, and
- 6.6 per cent of the farms from 1920 to 1922,

From $1 to $2,000 from—
- 67.2 per cent of the farms from 1910 to 1915,
- 66.0 per cent of the farms from 1916 to 1919, and
- 36.9 per cent of the farms from 1920 to 1922.

Zero or less from—
- 28.3 per cent of the farms from 1910 to 1915,
- 18.2 per cent of the farms from 1916 to 1919, and
- 56.5 per cent of the farms from 1920 to 1922.

From these figures it may be observed that: While most of the farms during the first and second periods returned from $1 to $2,000

in labor income, a much larger percentage of them returned over $2,000 from 1916 to 1919 than from 1910 to 1915, and a much smaller percentage of them returned zero or less.

Although about as many of the farms returned over $2,000 for the labor and management of the operator from 1920 to 1922 as from 1910 to 1915, just about twice as many of them returned zero or less.

To present the variation in incomes in another way, the records were grouped by periods as before, but with one-fifth of the farms highest in labor incomes in each locality in one group, the one-fifth second highest in another group, etc.

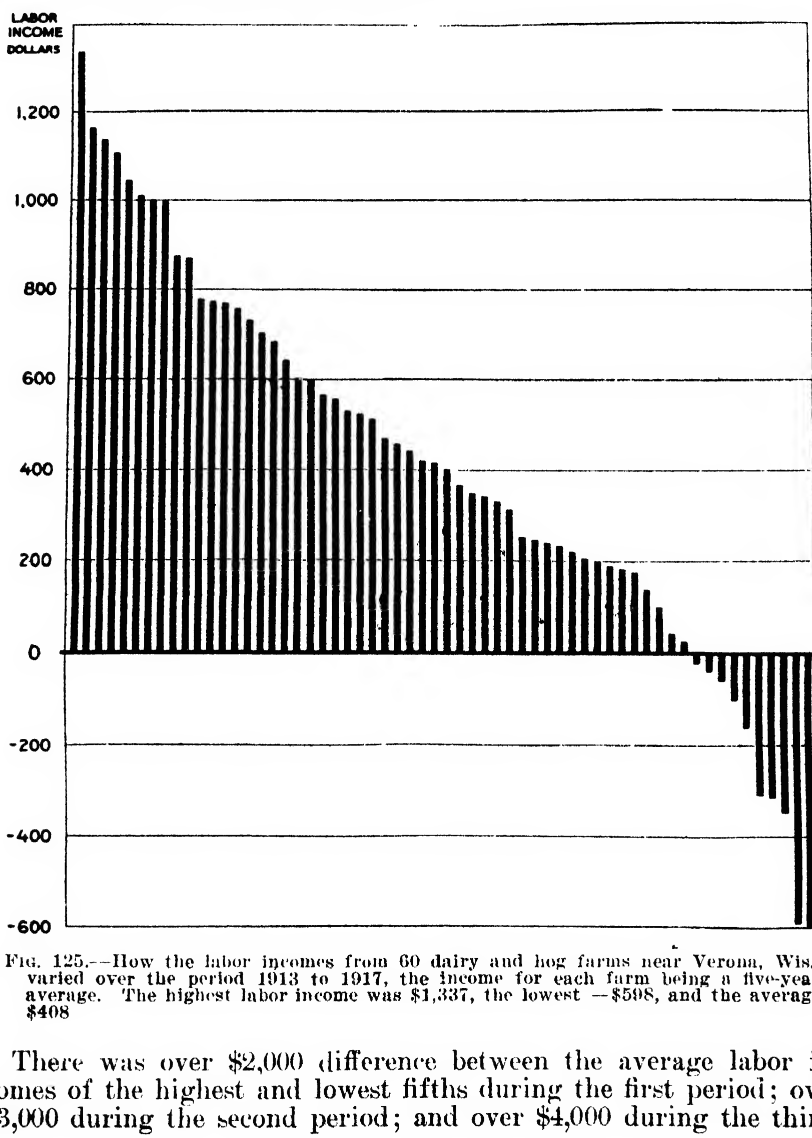

FIG. 125.—How the labor incomes from 60 dairy and hog farms near Verona, Wis., varied over the period 1913 to 1917, the income for each farm being a five-year average. The highest labor income was $1,337, the lowest —$598, and the average $408

There was over $2,000 difference between the average labor incomes of the highest and lowest fifths during the first period; over $3,000 during the second period; and over $4,000 during the third.

The group highest in labor income in the first and last periods averaged about as much as the group second highest in 1916 to 1919, whereas the group highest in 1916 to 1919 stood out with an average about twice as much as the highest in the two other periods.

The group third highest in 1910 to 1915 averaged about as much as the group fourth highest in 1916 to 1919, and as the group second highest in 1920 to 1922.

Only the group lowest in labor incomes averaged less than zero in both the periods 1910 to 1915 and 1916 to 1919, whereas all but the groups which were highest and second highest, averaged less than zero in 1920 to 1922.

H. W. HAWTHORNE.

INFERTILITY in Cattle and Vitamin Diet The dairy-cattle industry is suffering a constant economic drain and loss of valuable hereditary material because of uncertain breeding ability, delayed conception, and temporary sterility of both males and females. These conditions are found in heifers as well as in older cows and are causing much concern to dairy farmers and breeders of dairy cattle. In ordinary practice a cow is expected to calve once in each period of 12 to 14 months and is bred accordingly. Failure to conceive to the first or second service seriously interferes with the regularity of herd management and frequently results in an extended period of low or unprofitable production between calvings, thereby reducing the average earnings of the herd.

Effect on Rats Is Clue

The discovery by other investigators of the effects on the reproductive powers of white rats of feeding a ration deficient in vitamin E led to the conclusion that this shy breeding trouble in cattle might be similarly caused, particularly since it prevails in herds where management and feeding are highly specialized and also in herds where natural feeding conditions vary from one extreme to the other.

Sprouted oats have been reported to be one of the abundant carriers of vitamin E. For this reason this feed was selected for trial to determine its effect on the uncertain breeding condition in cattle.

During 1923 a limited trial was conducted in the Government dairy herd at Beltsville, Md. The favorable results which followed led to preparations for more extensive feeding of sprouted oats. From this later trial, thirteen animals have already been pronounced pregnant after receiving sprouted oats for periods varying from 10 to 122 days. These cases fall naturally into two distinct groups of 6 cows and 7 heifers.

Results of Sprouted-Oats Ration

Space does not permit a detailed discussion of each case, but the 6 cows varied in age from 8 to 3½ years. The number of services before oats were fed ranged from 5 to 17, and the average length of time from last previous calving to the first oats feeding was 14 months. Two of these cows conceived at the first service after receiving oats, two at the second, one at the third, and the other at the sixth service. The intervals from first oats feeding to conception ranged from 19 to 132 days, the latter in the case of the cow requiring six services.

Six of the seven heifers on this trial were being bred for first calf, the other for second after an abortion. Two were bred four times, two three times, and the others were unbred previous to oats feeding. The object of this work was to determine whether sprouted oats would be effective in reducing the number of services per initial conception. Four of the heifers conceived at the first service subsequent to oats feeding, the interval ranging from 10 to 19 days. The others required 3, 4, and 5 services before settling, and were fed 91, 113, and 114 days, respectively. This heifer group includes one animal which had shown no signs of heat up to 18 months of age but came in season 10 days after receiving the first oats, and conceived at the fourth service. Although there are no direct checks on these heifer trials, it is significant that conception after oats feeding required an average of two and two-sevenths services, whereas the average for all heifers in the herd is approximately four services for initial conception.

Additional heifers are now receiving oats before first breeding in order to obtain further data on this subject.

M. H. Fohrman.

INSECTICIDE and Fungicide Board's Work The insecticide act of 1910 is a Federal enactment designed to prevent the manufacture, sale or transportation, in interstate commerce, of adulterated or misbranded insecticides, fungicides (including disinfectants), lead arsenate, and Paris green; to prevent the importation of such misbranded or adulterated articles into the United States, and the exportation of such articles out of the United States.

Under the provisions of the act the Government is empowered to proceed criminally against persons who make interstate shipments of misbranded or adulterated goods, or against those who offer for sale adulterated or misbranded goods in the Territories or the District of Columbia. The Government is further empowered to make seizures of misbranded or adulterated articles shipped in interstate commerce and remove same from the channels of trade. The act also authorizes the Government to refuse entry into the country of misbranded or adulterated goods.

Penalties are provided, consisting of fines for a first offense and fines or imprisonment, or both, for a second offense.

Some of the principal features of the law are: (1) Definite standards for lead arsenate and paris green; (2) a requirement that a statement be made on the label relative to the active and inert ingredients; (3) a requirement that the total and water-soluble arsenic be stated; (4) a requirement that no false statement, design or device regarding the article or the ingredients or substances contained therein shall appear upon the label; (5) a requirement that a product shall be up to the standard under which it is sold and that it shall not be injurious to vegetation when used as directed by the manufacturers.

Organization

In the enforcement of the act, the Secretary of Agriculture is aided by a board composed of four scientists, one each from the Bureaus of Chemistry, Entomology, Animal Industry, and Plant Industry.

Working under the direction of these four scientists in the bureaus involved is a corps of chemists, bacteriologists, microscopists, entomologists, plant pathologists, and veterinarians, who analyze and test the various insecticides and fungicides appearing on the market. In addition to the various scientists actually employed by the board, various experts in the four bureaus involved are freely consulted and aid the board in determining whether or not the various products which come under the act will do what is claimed for them.

The board maintains a central executive office which directs the activities of a corps of inspectors, attends to all fiscal and business affairs of the board, arranges for hearings, collects evidence and prepares cases for reference to the solicitor of the department.

Enforcement of the Act

A force of inspectors is distributed over the United States for the purpose of inspecting shipments, collecting official samples, and getting evidence of violation of the law. Special attention is given to the collection of samples of insecticides and fungicides which are suspected of being adulterated or misbranded and to new preparations as they appear on the market. The samples collected are transmitted to the board under seal with complete records to show interstate shipment. The samples are assigned by the board to one or more of the four groups mentioned above and are analyzed and tested by the proper scientists.

If upon examination any sample is found to be in violation of the act, charges are prepared and if there has been substantial violation of the law the shipper is cited to a hearing. If no violation of the law is shown the case is placed in permanent abeyance. If a nonflagrant violation of the law is shown the matter is taken up with the shipper by correspondence.

After a shipper has answered citation, a full report of the hearing, accompanied by all the records, is submitted to the board. If prosecution is decided upon the case is transmitted to the solicitor of the department with the recommendation of the board. The solicitor prepares the case for the Department of Justice to which department it is forwarded by the Secretary of Agriculture. From the Department of Justice the case is forwarded to the proper United States attorney for prosecution. Notices of court judgment are prepared and published for the information of the public. In some cases the manufacturer makes such answer to citation that the board takes the case up with him by correspondence rather than court action.

In case of seizure action the procedure is quite similar to that outlined above, except that a seizure is made without previous citation of the shipper and the case is referred by the Secretary of Agriculture directly to the United States attorney in whose jurisdiction the goods are found.

Some of the more important articles covered by the act are insecticides and fungicides for general agricultural use, such as calcium arsenate, lead arsenate, bordeaux mixture, fish oil soaps, kerosene emulsions, lice and mite killers, lime-sulphur solutions, Paris green, dips, fly repellents, mange preparations, insecticides used in the household, disinfectants, etc.

The law has been actively enforced since January 1, 1910, and up to July 1, 1926, samples from 16,242 domestic and import shipments have been collected and examined; 1,539 cases having been reported to the courts to institute criminal action or seizure proceedings. Disposition has been made of 2,801 cases by correspondence with the manufacturers.

Various investigations have been made relative to basic facts which it was necessary to determine in order to enforce the provisions of the act, most of which have been published for the benefit of the consuming public and manufacturers.

Thousands of investigations have been made by the entomologists and the plant pathologists of the board to determine whether certain ingredients were active or inert and whether they were injurious to vegetation. Chemists of the board have investigated and devised many new analytical methods for examining insecticides and fungicides.

Board's Work Far Reaching

The activities of the board have been very far-reaching. When it is considered that all food-producing crops, all fruit-producing crops, all food-producing animals, the great cotton and tobacco crops, and wool-producing animals are all subject to the ravages of destructive insects or fungous diseases, and that growers are dependent to a large extent for their control upon the use of proper insecticides and fungicides, it will be realized that the enforcement of this act affects every individual in the Nation. The disinfectants and insecticides used in the home and public places are also subject to the provisions of the act. It has been estimated that the total annual losses from insects and fungi in the United States is in excess of $1,500,000,000. A considerable part of this loss can be avoided by the use of high-grade insecticides and fungicides.

Unless high-grade insecticides and fungicides of standard strength are used, which will do what is claimed for them, the treatment of crops and animals will be a partial or total failure and the grower will not only suffer the loss in price he paid for his insecticide or fungicide but will suffer the much more serious and enormous losses caused by insects and fungi (including bacteria).

Most Labeling True

As a result of the enforcement of the insecticide act, it is probable that about 80 per cent or more of the labels now used on interstate shipments of standard agricultural insecticides and fungicides bear statements that are absolutely true or only slightly faulty. It is unusual to find on the market at the present time samples of lead arsenate and Paris green which are not in conformity with the standards required for such products. Yet some 10 to 15 years ago it was a common occurrence to find on the market samples of lead arsenate adulterated with water, samples of Paris green adulterated with sand and sodium sulphate, and even in some cases samples of Paris green which did not contain any of this material. The labels of hundreds of agricultural and other insecticides and fungicides have been corrected so as to give proper dilutions for use; the adulteration of pyrethrum powder has been greatly reduced; the selling of lime-

sulphur solution, Bordeaux mixture, tobacco extract, dips, etc., under false claims relative to composition and efficacy have been greatly reduced. Finally, and of extreme importance to the country, the activities of the board, carried out by seizure, prosecution, and education, have been of great service in protecting the cotton planters of the South against the purchase of low-grade calcium arsenate.

J. K. HAYWOOD.

INSURANCE Against Fire and Storms The insurance needs of the farmers are numerous and varied. Few if any industrial groups are subject to losses from a wider range of hazards. The farmer's buildings, equipment, and livestock are subject to loss or destruction by fire, lightning, and windstorm to quite as great an extent as are improvements and personal property in the city. His livestock is also subject to loss from disease or accident. His crops are subject to a variety of climatic and other hazards. He is as much in need of life insurance and various forms of accident and casualty insurance as is the man in most lines of commerce or industry.

For many of his insurance needs the farmer, so far as he provides for them at all, relies largely upon commercial agencies intended to serve all economic groups. A large percentage of farmers, however, have found it possible to meet certain of their insurance needs at a marked saving in cost by means of specialized agencies or organizations under their own management and control. This is particularly true in the field of fire and windstorm insurance.

Farmers' mutual fire insurance companies constitute an increasingly important source of insurance protection to the farmer. The number of such companies has not materially increased in recent years. The organization of new mutuals of this type has been largely offset by consolidations of smaller companies. The business territory of existing organizations has, however, been considerably extended in numerous cases, and the total volume of insurance carried shows a steady and substantial growth. Farmers' mutual fire insurance is by no means a new and untried experiment. The oldest companies in this class have passed the century mark. But the most rapid increase in number of such organizations took place in the last quarter of the past century.

Two Thousand Farmers' Fire Mutuals

The present number of farmers' mutual fire insurance companies in the United States is nearly 2,000, and the total amount of insurance carried by them exceeds $9,500,000,000. The average annual cost of insurance during the past five years has been approximately 26 cents per $100. This average cost is about 2 cents per $100 greater than the average annual cost during the preceding five-year period. This slight increase in cost is by no means surprising. The postwar depression in agriculture, like most such experiences, has had a decided tendency to increase fire losses on the farm. Maintenance, upkeep, and replacements of property have in many cases been unavoidably neglected. Many of the commercial companies, in spite of rates materially higher than the cost charges in the

farmers' mutuals, have found it necessary to restrict their activities in the field of farm fire insurance, and a few such companies have entirely discontinued their farm departments.

About 15 per cent of the farmers' mutual fire insurance companies write so-called combined protection, covering against windstorm as well as fire and lightning. These are in general the larger companies operating in a number of counties or in an entire State. Those with more restricted business territory very properly leave the wind hazard to specialized windstorm companies operating on a state-wide basis or at any rate covering a considerable number of counties. In about a dozen States of the Middle West these windstorm mutuals are closely allied with the more local fire insurance mutuals, to the marked advantage of both classes of companies.

Scope of Mutual Insurance

Farmers' mutual insurance is now rather generally available to all farmers of good standing among their fellows, in all States outside of the Cotton Belt and certain of the Mountain States. In the Southern and Mountain States only a relatively small number of such companies are in operation, and these fall far short of covering the field.

Few, if any, attempts at cooperation among farmers have proved so generally successful as have their efforts to provide themselves with fire insurance by means of mutual companies owned and controlled by themselves. Essentially the same can be said of farmers' windstorm insurance, where companies for this purpose have been so organized as to cover a substantial territory and have been operated in close contact with the local fire insurance mutuals.

V. N. Valgren.

Irrigation and Its Cost to the Farmer

A fertile soil, a persistently industrious summer sun, and moisture when it is needed, make the ideal combination upon which the agriculture of the West is founded. Given a dependable water supply, the irrigation farmer carries his crops to a bountiful harvest, free from the worry of drought and storms which besets his eastern competitors. Hence his has been called an easy way to farm, and his lot has been envied.

It is far from being easy. Several seasons must elapse and a multitude of operations must be performed before a new irrigated farm is at its best. That is true of any farm, of course; but there are things to do preceding the actual use of water which are costly in time, strength, and money, and which are not necessary in the humid climates.

Even after dams and canals, for which the farmer eventually must pay, have provided the means by which water is brought to the land, the stubborn desert shrubs and bushes must be uprooted and removed, the fields must be leveled so that the water may be sent to every part of them, and farm ditches and irrigation structures must be installed to effect that distribution. Special tools and apparatus must be bought or made with which to do these things. The operations themselves are tedious and must be done carefully at the very start if later exasperations and expense are to be avoided.

Moreover, the periodic application of the water to the growing crops is not automatic. When the farmer's turn for water has come, he must take it or lose it altogether. Often he must do the work at night. When it is remembered that he has also to cultivate his fields and harvest his crops as does any other farmer, it will be realized that irrigation is not at all a cheap and easy mode of farming.

Cost of Irrigation Farming

If not cheap, just what does farming under irrigation cost? Any answer must be qualified, because the West is large and its agriculture is shaped by many factors besides the prevalence of irrigation. However, some significant averages have been derived by the division of agricultural engineering, Bureau of Public Roads, and the division of land economics, Bureau of Agricultural Economics, from the results of a cooperative study made to determine how much irrigation farmers can afford to pay for water.[8]

Of course, cost of water is only one item in the farmer's cost of producing crops, and permissible cost of production depends upon receipts; hence it is not possible to make a definite statement as to permissible cost of water for any type of farming. It is possible, however, to get comprehensive data as to costs and returns from farming under irrigation, and on the basis of the data as to other costs and as to returns, to determine approximately how much net return is available for paying for water. The study was made on that basis with the incidental purpose of getting information on the cost of clearing and leveling land and building farm ditches.

Representative Enterprises Canvassed

To make the averages fairly representative, enterprises were selected for canvass which it was thought would reflect the principal interests upon which the agriculture of various sections of the West has centered. The largest community canvassed was that served by the Twin Falls Canal Co., an enterprise now owned and operated by the farmers near Twin Falls, Idaho, and one of the first of the many irrigation developments undertaken under the terms of the Carey Act. Its agriculture is extremely diverse. The Wenatchee reclamation district, of Washington, was selected to represent the fruit-growing industry, almost the entire revenue of the farmers being derived from the sale of apples.

Several enterprises in northern Colorado, central Wyoming, and western Nebraska were included to represent communities specializing in the production of sugar beets, grain and hay, and the feeding of stock. A small district in western Texas, where almost the only crop was choice alfalfa grown for shipment to eastern markets, represented another specialty. The Carlsbad, N. Mex., project and parts of the Rio Grande, Tex., project of the Federal Bureau of Reclamation were included not only to represent the development fostered by the Government but also to permit a study of the costs and profits of farmers in the Southwest whose principal crop is

[8] A series of preliminary mimeographed reports on "Economic Limits of Cost of Water for Irrigation," by R. P. Teele and P. A. Ewing, has been issued.

cotton. Similarly the land settlement at Durham, Calif., was included because of its inception by the State of California. In all, nearly 6,000 farms were canvassed, and more than 4,200 individual reports, from both owner-operators and tenants, were retained for study because of their evident dependability.

Average Cost in Cases Studied

Only a portion of these schedules represented irrigators who had occupied the farms since their reclamation; hence data on cost of clearing, grading and leveling, and of farm ditches and farm-irrigation structures were obtained from only a comparatively few of the farmers, some of whom, moreover, could supply estimates on only one or two of those expenditures. The average cost of these operations, which are a necessary part of preparing a farm for irrigation, from all the enterprises canvassed except those of the Bureau of Reclamation, was $27.55 per acre.

Such expenditures as those enumerated enter into the farmers' permanent investment. The nearly 2,600 owners who were operating their own farms reported farm land, improvements, equipment, stock, and cash worth on the average $16,714 per farm against which they owed debts amounting to $4,506, their equity therefore, being nearly three-fourths the total farm valuations. The average farm comprised 81 acres, of which 59 acres were covered by water rights. Hence the average irrigated farm had a value of $206 per acre. The land alone was valued at $11,392 per farm, or $141 per acre.

This included the value of the water right for the portion of the farm on which water was used. Water rights often are sold separately from the land, especially in the case of new enterprises, but since the canvass included many farms which had changed hands several times since the original cost of water rights had been absorbed, it was not feasible to show separately the investments in land and water. It was true, however, that most of the farms canvassed could not have produced crops without irrigation. Therefore the average farmer's investment was considered as dependent upon irrigation for its success. His yearly operating expenses, based on the record for 1924 (1923 in a few enterprises) were as follows: Feed, $221; fertilizer, $15; hired labor, $570; interest on debts, $294; taxes, $212; annual charge for water, $101; automobile truck and tractor upkeep and operation, $122; miscellaneous items, $319; a total of $1,854. Interest on net investment was calculated at $912, and depreciation on buildings and machinery at $235.

Outlay for Fixed Charges

Of especial interest in these accounts was the fact that, while the annual water charge was only about one-twentieth of the total actual expenditures for farm purposes, water, taxes, and interest on debts—outlays more or less fixed in amount—together were almost one-third the entire expenditures for farm purposes, not taking into account depreciation and interest on net investment.

Perhaps a more significant way to examine the expense of farming under irrigation is to compare expenditures with returns. For instance, the three items just referred to—taxes, interest, and water—were

slightly less than one-fifth the average farmer's receipts from farm products. The average farm operated by its owner had receipts from farm products totaling $41 per acre, $18 per acre more than expenditures not including depreciation and interest on net investment. The excess of receipts over expenditures per farm was $1,405. Inasmuch as the survey did not undertake to ascertain the worth of the labor of the farmer and his family, it appears that the average owner-operator received $1,405 in addition to the part of his living obtained directly from the farm, the value of which was also disregarded. This amount was available to meet the expense of operating his farm, cover depreciation, and pay himself interest on his net investment. In 1924 he had a balance of $258, after making those deductions.

Average Farm Had Profit

Although the average irrigated farm showed a favorable balance in the year of the survey, a few more than one-fifth of the farms canvassed were operated at a loss, and an additional third showed net returns of less than $1,000, their balance being, in fact, less than enough to absorb depreciation and interest on net investment. If $1,000 be taken as fair return for the labor of the farmer and his family, more than half the farms failed to make wages for them, disregarding the part of the family living obtained from the farm, with nothing for interest and depreciation. However, the remaining half showed comfortable balances depending somewhat upon the size of the farm, the larger farms, as a rule, being the more profitable, except in such communities as that near Wenatchee where many farms, although representing large investments, were of relatively small acreage.

Moreover, as might be expected, the larger the proportionate area under water rights the greater were the returns from farm produce. On the other hand, the annual charge for water was a smaller proportion of the year's total, operating expenses for the farms showing highest net returns than for the average farm on the farms showing losses or small profits. This was true also as regards taxes and interest on debts. Going even further to emphasize the benefits of careful management, while the farmers receiving highest net returns reported almost insignificant sums paid them for labor off their farms, their outlays for labor were higher in the scale of total operating expenses than those of any other group.

Remembering the undeniable success of many farmers whose investments far exceeded the averages derived from the entire canvass, nevertheless it must be concluded that, if the farms were truly representative of irrigation farming generally and the survey year was a normal one, farmers can not afford to pay even as much as $141 per acre for water rights and land prepared for water unless some financing plan is available, such, for instance, as that offered by the Federal Government, which charges no interest to settlers on the projects of the Bureau of Reclamation, or unless some crop of high value especially suited to the climate or having particularly advantageous markets can be relied upon to augment the steadier but less liberal returns to be expected from diversified farming.

PAUL A. EWING.

JAPANESE Beetle Control Since the Japanese beetle (*Popillia japonica* Newman) was found to occur in the United States, in 1916, at a point near Riverton, N. J., it has increased its numbers and area of distribution until at the close of the summer of 1926 it occupied an area of approximately 13,919 square miles. The States of New Jersey, Pennsylvania, and Delaware are cooperating with the Federal Government in supporting this project, and large appropriations are being made for the further study, control, and prevention of spread of this insect.

The Japanese beetle became established in a territory particularly suited to its requirements. Here were large areas of sod land where it could breed in almost unlimited numbers, together with a variety of crops and plants on which it could feed, in many cases without restriction. The temperature and moisture conditions were favorable for its development, and these, together with an almost total absence of parasitic or predacious insect enemies, have enabled it to reproduce and multiply in unbelievable numbers. The density of infestation in the vicinity of Riverton, N. J., where the beetle has occurred for the longest time, has increased from year to year. This increase was marked by corresponding increase in damage to various crops, such as apples, peaches, cherries, grapes, and ornamental plants. It is only within the last year that the density of infestation apparently has reached its maximum.

Life History of the Insect

The color of the Japanese beetle is bright metallic green, except the greater part of the wing covers which are coppery brown. The wing covers do not entirely hide the abdomen, and expose a row of five lateral and two posterior spots composed of white hairs. The under surface of the body is covered with short grayish hairs; the legs are dark metallic green, varying in tint in different positions. The adult beetles are about one-half inch long. The Japanese beetle has an annual life cycle. The adults begin to emerge between the 10th and 15th of June and are present until the middle of October. Each adult female beetle lays between 40 and 50 eggs in the soil. These are deposited at various times, usually at the rate of 3 to 5 eggs per day during a period of four or five weeks. When hatched the tiny grubs are about one-sixteenth inch long. They become full grown in about six weeks, at which time they reach a length of approximately 1 inch. The larvæ resemble our native white grubs in appearance, although they are considerably smaller than the larvæ of the common June beetle. As cold weather approaches in the fall they enter the soil to an average depth of about 7 inches, where they pass the winter in a quiescent condition. In the spring the larvæ become active again and move upward near the surface of the soil, where they feed for about a month, and by the latter part of May or early June transform to pupæ, and appear as adults two to four weeks later.

Feeding Habits

Over 200 species of plants have been recorded as furnishing food for the Japanese beetle in New Jersey. Practically all of the economic crops grown in the infested territory are represented in the list. The more favored food plants include apple, sweet cherry, plum, grape, blackberry, clover, soy bean, and corn; shade trees, including linden, birch, elm, horse-chestnut, sassafras, willow, white oak; and many ornamental shrubs, particularly althea and rose. Flowering plants and weeds of many kinds are also attacked. Besides attacking the foliage (fig. 126), the adult Japanese beetles are especially partial to the fruit and are often found clustered on both apples and peaches in large numbers (fig. 127). As many as 278 beetles have been collected at one time on a single apple. The feeding is characteristic and resembles that done by the native rose chafers.

FIG. 126.—Japanese beetles feeding on apple foliage

When abundant, the larvæ or grubs of the Japanese beetle have become a serious pest in lawns, golf courses, and pastures. The rich soil in the heavy turf of golf courses has offered attractive places for the beetles to lay their eggs. The larvæ feed on the grass roots, cutting them off immediately below the surface of the ground.

The quarantine on farm products is intended to prevent the carrying of the adult beetle from the infested area to points outside on such articles as experience has shown as likely to harbor the adult beetle. At the present time the movement of the following articles is restricted: Sweet corn, beans or peas in the pod, cabbage, parsley, carrots with tops, beets with tops, onions with tops, lettuce, outdoor-grown flowers, hay, straw, unthreshed grain, and forage crops. The restrictions on these articles are effective during the time the beetles are on the wing; namely, between June 15 and October 15.

Quarantine on Nursery Stock and Soil

The quarantine on nursery stock and soil is to prevent the carriage of any of the immature stages of the Japanese beetle to points outside the infested area. Since one or more of the immature

stages are to be found in soil at all times, the regulations affecting the shipment of sand, soil, earth, peat, compost, and manure are effective throughout the year.

The absence of any natural or parasitic enemies of the Japanese beetle became apparent soon after its discovery in New Jersey. Therefore, two experts were sent to Japan in 1920 for the purpose of studying the insect in its native home and of finding, rearing, and shipping to this country any of its natural enemies which seemed desirable.

Large shipments of parasites have been received from Japan, many of which have been reared and released in the heavily infested area near Riverton and Moorestown, N. J. During the summer of 1924 the tachinid fly *Centeter cinerea*, which lays its eggs on the adult beetle and kills it within about five days, was found to be established near Moorestown. In 1925, during the first two weeks of beetle emergence, an average of 8 per cent of the beetles were parasitized by the Centeter, and before the end of the season it was found that the parasite had extended its range to include approximately 40 square miles. A large number of dexiid flies of the species *Prosena siberita* have been imported and released in the Moorestown district, and likewise a large number of solitary wasps of the genus Tiphia have been imported.

FIG. 127.—Japanese beetles feeding on apples

Control of the Larvæ

A method has been developed for the control of the larvæ in lawns, contemplating the use of a 71 per cent emulsion of carbon disulphide diluted at the rate of 1 quart of concentrated emulsion to 50 gallons of water. The dilute emulsion is applied to the sod at the rate of 2 or 3 pints to the square foot.

As the beetles became more numerous the usual sprays applied for the control of many of our native pests were not effective. Therefore, a large amount of work and study has been devoted to the working out of measures whereby apples, peaches, grapes, and ornamental plants could be protected from their attacks.

On ornamental plants, the best control was obtained with a spray consisting of a mixture of lead arsenate and lead oleate, at the rate of 4 pounds of the paste to 50 gallons of water. A mixture of lead arsenate and flour, used at the rate of 3 pounds of lead arsenate and 2 pounds of flour to 50 gallons of water, gives good control on apples, cherries, grapes, and plums. It was found that lime gave very good protection as long as it remained on the foliage or fruit. However, lime does not have good sticking qualities and is easily washed off by rains.

It is anticipated that a pyrethrum soap developed at the laboratory may be extremely useful for the householder who wishes to destroy the beetles on rose bushes and other flowering plants. Additional investigational work is continuing along the lines of developing a substitute for arsenate of lead which can be used in obtaining effective control of the Japanese beetle. Several materials have been developed which are showing promise, although it is not expected that they can be recommended until much further work has been done.

LOREN B. SMITH.

JERUSALEM Artichoke an Inulin Source The Jerusalem artichoke (*Helianthus tuberosus* L.) grows as a native plant over a large part of the United States, being most abundant in the Corn Belt. It is usually found in the most fertile soils, especially in the alluvial soils bordering streams, and occurs from Alabama to Ontario and from the

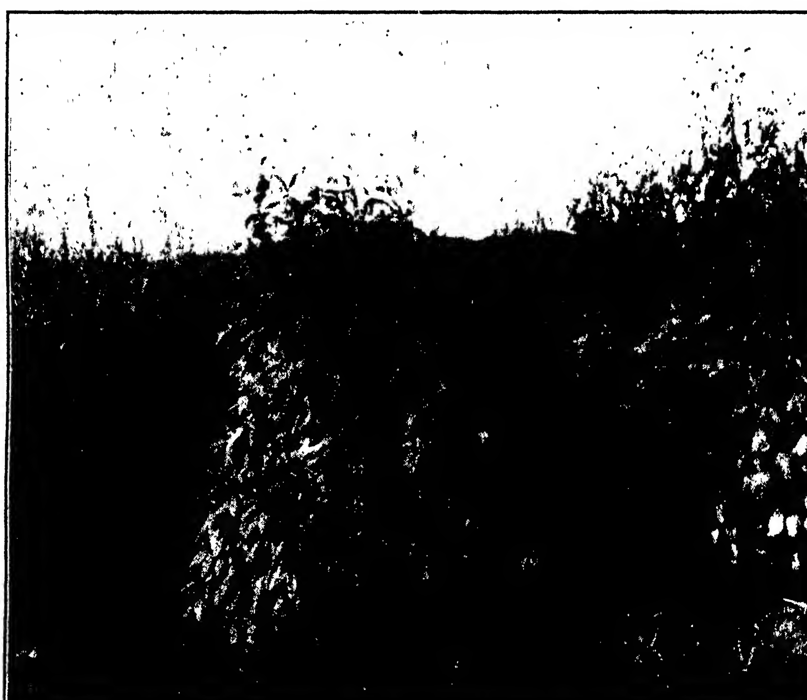

FIG. 128.—Jerusalem artichoke varieties. Left to right, from San Fancisco, Calif., Toronto, Canada, and Norfolk, Va.

Atlantic coast to Kansas and Nebraska. It was introduced into Europe, probably by the French, in the early part of the seventeenth century. It was erroneously credited to Brazil, and this mistake was not corrected by botanists until the decade between 1880 and 1890. As a crop plant it is new, having had little improvement at human hands. The present varieties in the United States have all been wild-

lings. It thus forms an interesting study in the origin of cultivated crops.

The Jerusalem artichoke has a varied usefulness. It is peculiar among our cultivated field crops in that it stores its carbohydrates as inulin rather than as starch. This character is connected with much of its interest and usefulness.

At present it is most extensively grown in France, where about 300,000 acres are planted annually. The tubers there are largely used for feeding cattle and sheep, though part of the crop is fed to swine and horses. It is very widely grown in both the Northern and Southern Hemispheres, being quoted by seedsmen from Sweden to New Zealand. Outside of France, however, it is nowhere an important crop. In the United States, where it is native, it is known to many people but is not extensively planted.

This plant is very productive and its culture is not expensive. But there are difficulties in storing the tubers, on account of shriveling and decay, and the plant has a considerable reputation as a weed.

Uses as Human Food and Stock Feed

As a human food it gives a pleasant variation to potatoes and garden roots. Probably its widest use at present is in the form of home-made pickles. When boiled it is much more watery than potatoes or the ordinary roots. It has a decidedly sweet flavor in all types of cooking. Probably the best mode of preparation is as chips, made by frying thin slices in deep fat. These are very crisp and are much sweeter than potato chips. They may also be prepared by baking in a slow oven, thus becoming less watery.

Recent experiments have shown that the Jerusalem artichoke may be used by diabetic persons to a much greater extent than any foods containing starch. This fact has given it great interest to a large and apparently increasing group of people who are subject to this disease. Thus it appears to be on the way to wider use as a human food generally, since if used extensively as a food for diabetic patients its use will doubtless spread to other people.

Its greatest usefulness in the past has been as a stock feed. The tubers have been fed to all kinds of livestock. In France, as above stated, they are mostly used for sheep and cattle, and in this country they are most frequently grown for hogs. They have been highly recommended for this purpose, but have never superseded corn. The leaves and branches are also good stock feed and are extensively used abroad. The stalks may be cured in the same way as corn stover, or they may be made into silage. Judging by the past, it is not probable that the Jerusalem artichoke will make much headway against corn for fattening livestock or for forage or silage. In France it is grown outside of the limited maize-growing region, and in the United States it is most extensively grown in the South and in the Pacific Northwest where corn is not a very certain crop.

Industrial Use

It has been investigated in Europe as a source of industrial alcohol and is apparently about as useful for that purpose as the beet. Some of the French crop of tubers is worked into alcohol.

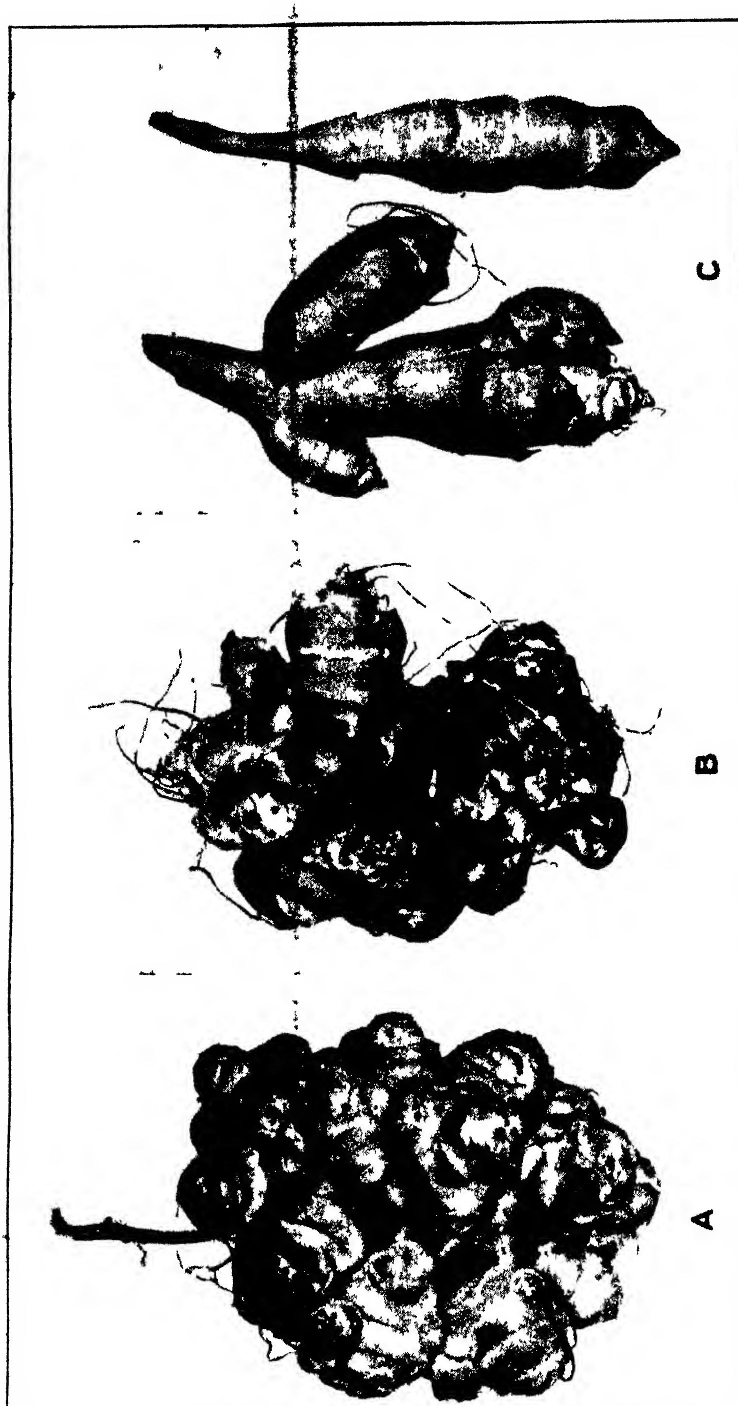

FIG. 129.—Three varieties of Jerusalem artichoke tubers. A, White; B, Ordinary; C, Spindle

At present it has promise as a source of levulose or fruit sugar,[19] which is obtained from the inulin contained in its tubers. Levulose has a sweetening power much greater than that of sucrose or cane sugar, which is the sugar most widely known. Levulose bears the same relation to inulin that dextrose (corn sugar) does to starch. Inulin is fairly widely distributed in the plant kingdom. The most promising producers are all members of the composite family, to which the sunflowers belong and which includes the Jerusalem artichoke, the dahlia, and chicory. Of the three, Jerusalem artichoke seems to offer the greatest promise as a source of levulose.

The tubers of different varieties tested at the Arlington Experiment Farm at Rosslyn, Va., vary in levulose-producing ability from 10 to 16 per cent, moist weight. They also vary greatly in productiveness and in adaptability to harvesting with machinery. Some 50 or more distinct types have been studied to some extent at the Arlington farm. There are probably many hundreds of varieties to be found in various parts of the United States east of the Rocky Mountains. Canada can also furnish many types. If the Jerusalem artichoke is to become important as a source of inulin it is important that as wide search as possible be made for the best producers, also that seedlings be grown and that crosses be made. The important characters on which to base selection are (1) short runners, so that the crop may be harvested by machinery; (2) productiveness; (3) high inulin content, and (4) earliness of maturity.

First Native Field Crop

The subject may be summarized as follows:

The Jerusalem artichoke is the first plant native to what is now the United States to obtain a status as a field crop. It is most extensively grown at present in France, where the 1925 crop was grown on about 300,000 acres.

It stores its carbohydrates as inulin instead of starch.

As a human food it offers a variation from potatoes and has promise of increase in usefulness through its suitability for the diet of persons affected with diabetes.

As a forage crop, as either tubers or plants, it must compete with maize and will probably find its expansion outside the maize region.

As a source of levulose it has no competitors any better developed than itself, and it is here that its greatest present interest lies.

Its varieties are very numerous and are scattered over the United States and Canada, east of the Rocky Mountains and north of Georgia. Wide search is needed to find the varieties best adapted for inulin production.

D. N. Shoemaker.

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[19] Levulose has been known for many years, but it has been very difficult to crystallize, and the pure crystalline form has been very expensive. The sugar laboratory of the Bureau of Standards has recently developed a method of crystallizing this sugar from a water solution. Jackson, R. F., Silsbee, C. G., and Proffitt, M. J. A method for the manufacture of levulose. Ind. and Eng. Chem. 16, 1924; p. 1250; Facts about sugar 19: p. 586, 1924; The planter and sugar manufacturer 73: 1924, p. 469; Sugar 27: (1925), p. 9.

LABOR Requirements Measured for Principal Crops Farm crops may be divided into three broad groups with reference to the amount of man labor used in producing them. Tobacco, cotton, sugar beets, potatoes, fruit, and truck crops absorb relatively large quantities of labor. Corn, the grain sorghums, peanuts, and like crops need less labor than the more intensely cultivated crops, but more than most hay and small-grain crops which are usually produced with the least labor. This classification with respect to labor used is only relative. More labor may be used on a particular crop in some sections than is usually needed to produce some other crop of a more intensive nature in another part of the country.

Ordinarly, tobacco requires more labor per acre than any other major crop. Requirements for producing different types of tobacco differ, largely because of the different methods of harvesting, curing, and preparing the leaf for market. An acre of burley tobacco yielding from 800 to 1,000 pounds requires for growing, preparing for market, and marketing from 350 to 400 hours of labor. An acre of bright tobacco, the principal cigarette type, as grown in south-central Virginia and yielding 600 to 700 pounds requires about 400 to 500 hours of labor. In the same district 300 to 350 hours of labor will produce an acre of Virginia dark fire-cured tobacco yielding 800 to 900 pounds, and 250 to 275 hours of labor will produce an acre of Kentucky dark tobacco of the same yield. Labor required for producing a pound of tobacco of these types ranges from about 0.7 hour for Virginia bright to about 0.3 hour for Kentucky dark tobacco.

Cotton's Labor Requirements

In the eastern cotton States (the old Cotton Belt), on farms where the yield of lint is 150 to 200 pounds per acre, 100 to 125 hours of labor are usually necessary to prepare, cultivate, harvest, and market an acre of cotton. In the black belt of Texas 50 to 60 hours of labor are utilized in producing an acre of cotton yielding 140 to 160 pounds of lint, while in the western district of the same State growers with similar yields normally expend only 35 to 40 hours of labor per acre. Requirements for producing a pound of lint cotton for the above districts range from about 0.7 hour of man labor in the Eastern States to about 0.2 hour in the western district of Texas.

Large level fields which permit the use of larger machinery for preparing the land and for cultivating the crop, together with seasonal conditions which make control of weeds easier are the chief reasons why western cotton growers produce cotton with less labor than do the growers in other districts.

The use of large machines also makes it possible to grow more cotton per man. In parts of Texas and Oklahoma growers frequently plant as much as 100 acres of cotton per man with extra labor for hoeing, thinning, and harvesting. Growers in the eastern cotton States usually plant from 10 to 20 acres per man.

From 65 to 100 hours of labor are normally used in producing an acre of potatoes. Average requirements for producing a bushel of late potatoes are about 0.4 hour in the Northern States, while 0.6 to 0.7 hour of labor is usually needed in producing a bushel of

early potatoes in southern districts. In the New England States more labor is used on an acre of potatoes than in other late-potato districts, but the higher yields make it possible to produce a bushel of potatoes with about the same quantity of labor as is used in some of the other late-potato districts.

Much Variation on Corn

In the production of corn, requirements in various districts differ largely because of different methods of harvesting, size of machines used, and yield per acre. In the Corn Belt where good-sized implements are used for preparing the land and cultivating the crop, and where the crop is harvested by hand from the standing stalk, from 15 to 20 hours of labor per acre are usually adequate with yields of 35 to 45 bushels. In some of the Southern States from 50 to 70 hours of labor per acre are ordinarily required for corn yielding 20 to 30 bushels when the stalks are cut and shocked and the ears are harvested by hand from the shock. In the North Atlantic States corn is usually harvested in this way and the requirements per acre are similar, though yields are higher.

Requirements for producing a bushel of corn in the various districts differ even more than do requirements per acre. Usually about 2.5 hours of labor are required for producing a bushel of corn and caring for the stover in certain Southern States as compared with about 0.5 hour in the Corn Belt when the ears are husked from the standing stalk and large level fields and large machines make it possible for one man to grow more acres of corn than in other producing districts.

Small-grain crops require relatively little labor. Size of machines used, size of fields, lay of land, and climatic conditions affect labor requirements for producing these crops to a greater extent than does yield. Requirements for producing a bushel of wheat range from about 2.5 hours in the Southern States to about 0.3 hour in the Pacific Northwest. In the Western States combines are frequently used for harvesting and large teams or tractors are utilized for preparing land and for seeding, whereas in the southern and eastern districts relatively small machines and crews are used for all operations.

But little labor is usually required for producing an acre of most hay crops and practically all of this labor is required during the harvesting season. Requirements on a ton basis vary from 4.5 hours for clover hay to 7.2 hours for alfalfa on irrigated land. For annuals, such as cowpeas or soy beans, which are seeded for hay and cultivated during the growing season requirements are much higher than for other hay crops.

A. P. Brodell.

LAND Settlement Policies Returns from agriculture in recent years have been such that special inducements are necessary to attract men to the land. Restricted immigration and the general movement of labor into the industries have tended to intensify the customary shortage of settlers. The additional land still available for settlement far exceeds the present

demand for agricultural expansion. This land is largely in private ownership, and a considerable portion of it must be cleared, drained, or irrigated before it can be cultivated or pastured. Individual settlers or colonization and settlement companies need liberal and specialized forms of credit to develop this type of land. The land is not of uniform productive value, and many large areas of poor land will have to be administered with great care if the settlers are not to suffer undue hardships.

The economic situation of agriculture and other factors not here discussed resulted in conditions that have demanded changes in land-settlement policies.

Among the most striking changes in these policies is the attitude of State officials and the general public toward practices used to attract settlers. Many private companies and many States now find their most successful forms of advertising to be offers of reasonable and workable terms of land sale and credit, the protection of settlers against exploitation either in the type of land sold or in other business transactions, and in the general supervision of the settlers' welfare by directing him to advantageous locations and by giving him advice or putting him in touch with State institutions that are able to assist him in adjusting himself to his new environment.

Better Methods Adopted

The old practices of extravagant display advertising have been supplanted in many cases by a sober statement of facts in the form of official publications, crop and livestock reports, exhibits of bona fide products, and classified advertisements in the public press.

Various State agencies have been created to disseminate information tending to assist the people who contemplate settling in the State and to look after the incoming settlers after they are located. The work of these agencies includes selecting locations for colonization projects or for individual settlers, offering ready-made plans for colonization, keeping the settlers in touch with State and Federal agencies, controlling the sale of real estate by licensing real estate dealers, and personal follow-up work with the settlers who need advice in establishing themselves.

Several States through their State land-settlement boards have attempted to attract and establish settlers by selecting land for group settlements or for individual settlers, preparing the land for occupancy and cultivation and then selling it direct to settlers. This plan has operated with varying degrees of success.

In California and Washington the settlement boards purchased tracts of land, subdivided it into farm units, erected the necessary buildings and installed other improvements, constructed irrigation systems, prepared the land for irrigation, and planted some of it to crops. Sales contracts were adjusted to the financial standing of the settlers and the earning capacity of the land. Personal loans were granted for the purchase of livestock, necessary implements, and operating expenses. Community centers were established and a paid manager directed each colony. Settlers were required to be personally fitted to work their farms and to have a specified amount of capital. After the usual ups and downs three State groups were

established under these plans: One of 52 settled farm units near White Bluffs and Hanford, Wash.; one of about 140 farms at Durham, Calif.; and one of about 230 farms at Delhi, Calif.

The settlement board of Oregon purchases individual farm units in different parts of the State. These units, under the direction of the Oregon Agricultural College, are improved, equipped, and operated until they are on a paying basis. They are then sold to farmers under special credit arrangements with the understanding that they will be operated somewhat as demonstration farms.

Settlement Promotion Work

The constantly increasing areas of idle cut-over land in the Great Lakes States have led private owners and State officials to formulate policies to induce economic development of these lands.

In 1917 Minnesota inaugurated a plan to promote development on State-owned land. A revolving fund of $300,000 was appropriated for clearing unsold school and swamp land, but not more than $300 might be expended on each 40-acre tract. The State improvement board selected 600 tracts classified as agricultural land, cleared and plowed 5 acres on each tract and then offered them for sale at public auction. The purchasers were required to occupy the land and continue its improvement. Less than 200 tracts were sold, and the continuance of the plan necessarily awaits a revival of the demand for farms.

Under the Wisconsin farm mortgage association act, settlement and colonization companies are enabled to keep their credit in a liquid condition and to expedite the development of the individual farms in their projects, while the State is given considerable regulatory power over the companies. The mortgage associations may issue loans on first mortgage on improved or partially improved real estate up to 65 per cent of its appraised value; they may purchase first mortgages of like kind, and they may issue bonds secured by the pledge of the mortgages taken or purchased. Before a colonization company may take advantage of this law the plans of settlement and the land for the project, the terms of loans to the individual settlers, and the farms offered for security must be inspected and approved by the commissioner of immigration. The mortgage associations of the State have issued approximately $1,200,000 worth of bonds on a security of over 600 mortgages.

Michigan offers protection to settlers against the purchase of worthless land through the land certification act and detailed information as to the economic possibilities of idle land through the work of the land economic survey. State land certification is confined to land in private ownership and all expenses are paid by the owners. The land is examined by experts selected by the State and the certificates as to its agricultural possibilities are issued on the basis of the examiner's reports. The owners contract with the State to sell for agriculture only certified land. The cost to date has been about 16 cents per acre. The State is attempting to place before the public the advantages of certification in such a way that the demand for certified land will induce all private holders to take advantage of the act.

The Michigan Land Economic Survey is making a detailed scientific inventory of the land resources of underdeveloped counties for the purpose of formulating a policy for the economic use of the land. The survey is supported by State funds and works on a county basis regardless of ownership. To date the field work and mapping have cost less than 5 cents per acre.

Loans to Ex-Service Men

Oregon, California, and South Dakota have attracted ex-service men to the land by granting them special loans for buying farms. In South Dakota the loans are granted jointly with loans from the rural credit board, and are secured by second mortgages. In Oregon the ex-service men borrow direct from the soldiers' welfare board up to 75 per cent of the purchase price of the farm, provided the loan does not exceed $3,000. The loans are granted only on improved land and are secured by first mortgage, payable on the amortization plan for a period of 28 years at 6 per cent interest. In August, 1923, over 1,500 ex-service men had used the loan system in buying farms. In California the loans are granted on land, which must be under ditch, with drainage provided but otherwise not improved, and must not exceed $7,500 in value. The soldiers' welfare board purchases the land and resells it to the ex-service men. In August, 1923, 12 men had bought farms with this loan.

Some of the irrigation States have adopted policies to attract both capital and settlers to their irrigation districts. A large number of States certify irrigation district bonds. In Washington the director of conservation is authorized to use portions of the revolving reclamation fund to purchase irrigation district bonds. Since the districts must conform to the regulations of the director before he will purchase their bonds he is able to exercise considerable latitude in governing the terms of sale for the land and other activities of the districts. Settlers in irrigation districts in Oregon are relieved from paying interest on the district bonds during the early stages of development, since the State is legally authorized to meet the interest charges during any or all of the first five years of the bonded period. No definite well-rounded program for directing and controlling land settlement has been adopted by any one State, but a few fundamental policies such as controlling the sale of real estate, land examination and certification, and specialized credit facilities have been inaugurated in several States.

B. Henderson.

LAND Value Changes from 1920 to 1926

The value of farm real estate, which includes from two-thirds to four-fifths of the value of the farmer's capital investment, has since the peak of 1920 shown an apparently steady approach toward stability, but considerable regional variation both in the amount of change since 1920 and in the rate at which the change is still taking place.

As indicated in Figure 130, the course of the department's preliminary annual estimates of the value of all farm lands with improve-

ments averaged for the United States has shown a steadily lessening rate of decline, although there is as yet no assurance that the bottom has been reached. On March 1, 1926, the index stood at a point slightly greater than 70 per cent of its 1920 high point. Reports of the recent census of agriculture as of January 1, 1925, recorded a drop of approximately a fourth during the five-year period since January 1, 1920.

Although other factors enter, the value of farms is obviously in large measure dependent upon current income and future prospects

LAND VALUES, FARM PRICES, AND INCOMES
1920-1926

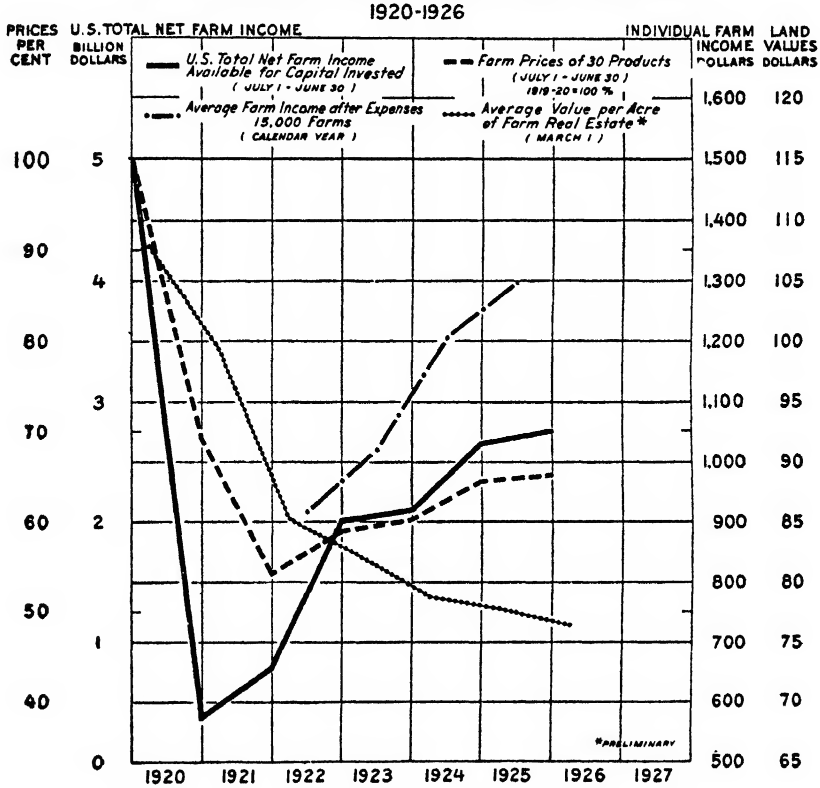

FIG. 130.—Land values, farm prices, and incomes, 1920–1926

of income. Available net farm income data and the prices of farm products, as also indicated in Figure 130, have all shown a steady upward trend since the low point of the depression period. This has been reflected in an apparently progressive checking of the rate of decline in land values. When this declining curve of average values for the United States will be fully checked obviously depends in large measure upon the future course of the prices and yields of farm products, and of the various elements that enter into costs, including possible changes in methods or in products grown.

Two other factors which will assist stability in values in many cases are:

(1) In a number of areas the foreclosures and other forced liquidations of the depression have probably already exerted most of their influence upon values, and their depressing effect may be expected to be progressively less as market absorption thereof gains momentum.

(2) Reductions in mortgage rates of interest have already been announced in a number of regions and an easing of the credit situation elsewhere appears to be underway with an improvement in country banking conditions and an apparently increasing general supply of funds seeking investment.

Relationship to Commodity Prices

With respect to this adjustment of the value level it may be noted that, in relation to a dollar now worth in purchasing power but two-thirds of pre-war, farm real estate values (that is, land including buildings and other improvements) as returned by the 1925 census were really worth 11 per cent less per acre than in the census of 1910, although in current dollars averaging 35 per cent more. In 1925 on the basis of comparative total values, however, the aggregate value was in current dollars 42 per cent above 1910, but in unchanging dollars of a constant purchasing power, 6 per cent below. Comparison of the Bureau of Agricultural Economics' annual per-acre index of the value of all farm lands with improvements as of March 1 indicates the value (in current dollars) reached in 1926 to be slightly above that recorded for 1917, or about 25 per cent above the 1912, 1913, 1914 average; in terms of pre-war dollars as of 1912, 1913, 1914, approximately 20 per cent below the base period.

From this comparison, however, it can not be inferred that land values will necessarily readjust themselves to the general price level in the same relationship as existed before the war. That is to say, values expressed in dollars of a constant purchasing power may tend to reach stability at less than the 100 per cent which denotes pre-war parity. The general price level, for example, as measured by the United States Bureau of Labor Statistics' index of wholesale prices of all commodities has for the last four years fluctuated within relatively narrow limits about a horizontal trend about 50 per cent above pre-war. The index of average land values, on the other hand, is still declining and, as elsewhere mentioned, stood at about 25 per cent above pre-war (1912, 1913, 1914) early in the year.

Taxes a Factor in Land Values

That this inference does not necessarily follow rests in the first place on the obvious basis that a general price index is not a net farm-income index, and the 50 per cent higher general price level of the last few years has by no means been coincident with a net income 50 per cent above pre-war, as farmers well know. In particular, the rise in farm taxes has been seriously out of proportion to the movement in the prices of farm products. Since taxes form one of the principal costs in farm ownership, the proportion of income required for their payment under postwar price levels has been and

will continue to be a factor of no small importance in determining the level at which farm-land values will reach adjustment.

In the second place, it is not altogether improbable that land values in relation to income may reach stability in a changed relationship over that earlier obtaining, at least in certain regions. Studies made by the Bureau of Agricultural Economics[9] indicate that the ratio of current land income, as measured by cash rents, to current land value declined steadily from the opening of the century to 1920. In Iowa, for example, in which cash renting is fairly common, the ratio of gross cash rent to value fell from 7.7 per cent in 1900 to 4.3 per cent in 1910 and to 3.6 per cent in 1920. The subsequent sharp break in land values which for a generation "had never gone down" may serve for a time, at least, to check this apparently increasing capitalization of anticipated future increases and result in a higher ratio of current income to current value. Likewise, the disastrous experience of many "boom-year" purchasers of lands in which gross income ratios after deduction of taxes, depreciation, and upkeep of buildings netted in some areas of the Middle West less than 2.5 per cent upon value may have served to emphasize the importance of a more ample income ratio than had previously been accepted.

Regional Variations

Although farm real estate values as returned by the agricultural census of January 1, 1925, showed an average decline from the 1920 peak of about a fourth, differences between regions in extent of the change were marked. Also, the year-to-year trends and turning points as indicated by this bureau's annual per-acre index have shown considerable regional variation.

Figures 131 and 132 present the percentages of change from 1920 to 1925, by States, as returned by the census.[10] Figure 131 shows the change in acre value; Figure 132, the change in total value. The latter, particularly in some of the Mountain States, may give a somewhat truer picture of the change in the value level because of the downward influence upon the per-acre average caused by large additions to the farming area of land of a relatively low average grade and value. The truth, at least, probably lies somewhere between. Conversely, considerable declines in total farm acreage in some of the Southern and Eastern States, presumably owing to the poorer grades going temporarily or otherwise out of agricultural use, had the opposite effect upon percentage change measured in terms of values per acre.

That values in a general northeastern group comprising primarily the North Atlantic States but extending westward into Michigan and Wisconsin and southward into Delaware, Maryland, and the Virginias should have declined little relatively to the country at large, or have actually increased, is owing in part to the fact that farm prices of dairy, poultry, fruit, and vegetable products so largely grown in these States maintained the highest levels during

[9] CHAMBERS, CLYDE R. RELATION OF LAND INCOME TO LAND VALUE. U. S. Dept. Agr. Bul. No. 1224; 132 p., illus., 1924.

[10] 1925 figures preliminary. Comparisons with available final figures, however, indicate the differences to be negligible.

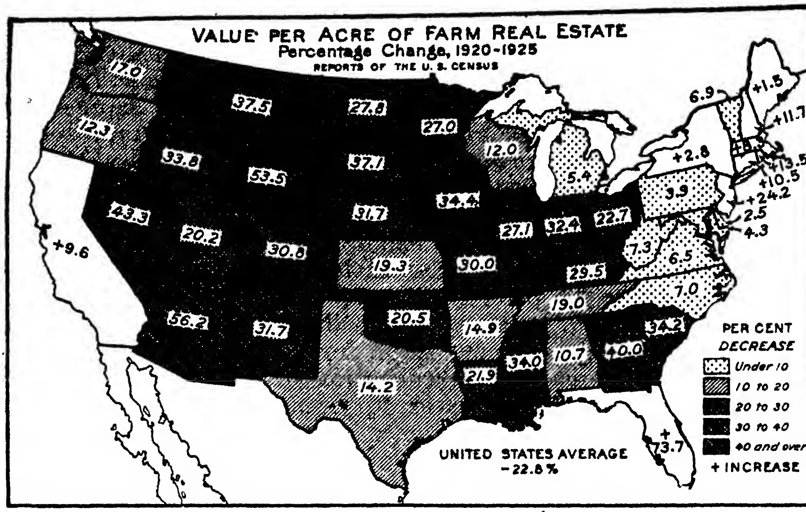

FIG. 131.—The extent to which farm real estate values changed from 1920 to 1925 varied considerably in different sections of the country. In some of the Mountain States large additions to the farming area of lands of relatively low value tended to exaggerate the declines in terms of value per acre. Conversely, the elimination of presumably poorer lands in portions of the South and East tended to minimize the per-acre declines

depression of any of the major farm-product groups. In some of the densely populated industrial sections of the East sustained or rising values were partially attributable to an apparently active demand on the part of urban workers for small farms easily accessible to city employment by motor bus or automobile. Although not directly entering into the census enumerations, considerable demand for farms for use as summer homes, camps, country estates, etc., probably exerted a sustaining influence in areas where farms had potential use as such.

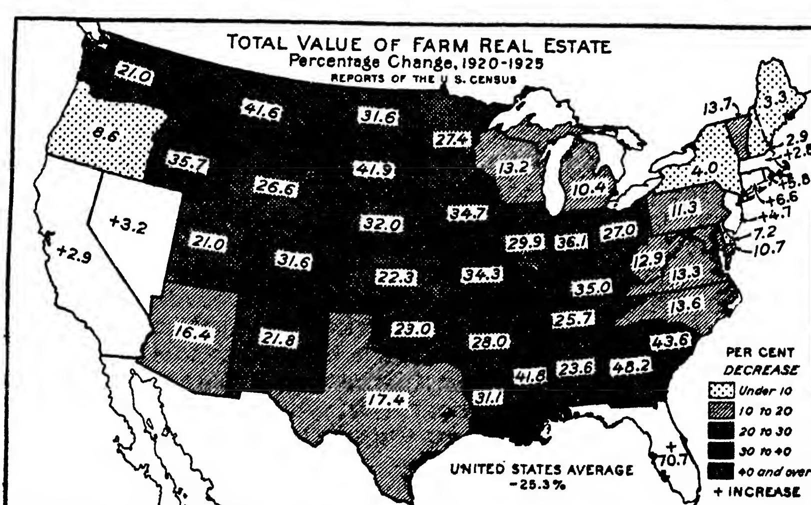

FIG. 132.—Changes in total value of farm real estate, 1920–1925

Similarly in Florida and the Pacific Coast States residential influences, as well as relatively well-sustained prices for some of the specialized products there grown, aided in supporting the values returned by the census. Residential development consequent upon population growth also widens local demand, particularly for dairy, poultry, and truck products.

Causes of Relative Stability

That values in the cut-over country of northern Minnesota, northern Wisconsin, and the Upper Peninsula of Michigan should have declined relatively little or should have actually increased may be accounted for in part by the considerations that agriculture here is more self-sufficient and hence perhaps less price-sensitive than elsewhere; that clearing and other improvement is a more or less continuous process among those who stay; that settlement promotion by land companies often to city prospects and often with various methods of financial aid is a more or less continuous process; that sales of timber products and the opportunity to work in lumber camps, mines, etc., aids in maintaining an income; that prevailing values are in some areas dominated by the price policies of land companies; and that in some areas, particularly near lakes and streams, the uses of land for recreational purposes have been accelerated with the improved highway program of recent years. In some of these counties an increase in the number of farms is indicated by the 1925 agricultural census.

In the cotton States the exceptionally severe declines in Georgia and South Carolina are primarily the result of several years of unparalleled damage by the boll weevil. The exodus of negro farm labor, both because of virtual ruin of his income, as in Georgia, and because of the attraction of relatively high industrial wages, constituted another important factor, especially in the plantation area. A combined average of farm real estate values in the principal cotton States,[11] however, though showing a greater percentage decline than in the northeastern dairy-poultry-truck group,[12] fell less than a similar combined average for the grain and livestock-raising States of the Middle West.[13] This is largely because cotton prices and cotton incomes, though in 1920 and 1921 declining the most severely of all of the major product groups, thereafter recovered to levels lower than for dairy, poultry, fruit, and vegetable products, but appreciably higher than for the grain and meat-animal group.

Increases in Mountain Counties

The increases in value to be observed in the mountain counties of western North Carolina and eastern Tennessee appear to have been associated in part with active development of the territory for residential and recreational purposes.

Sharp increases in the Texas Panhandle are largely an accompaniment of the rapid conversion of the former extensive cattle

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[11] North Carolina, Tennessee, Arkansas, Oklahoma, and all States south thereof, Florida excepted.

[12] North Atlantic States, Michigan, and Wisconsin.

[13] West North Central States, Illinois, Indiana, and Ohio.

ranches into smaller cotton farms. So adapted to raising this product cheaply has the area been found that activity in farm real estate took on the proportions of a boom. Increases in the southernmost group of Texas counties were associated with a considerable acreage cleared and made suitable for crops, by an increase in acreage planted to cotton, and in some sections by considerable expansion in the growing of fruits and vegetables.

On an average, apparently uniformly the most severe declines were recorded in the grain and livestock-raising States of the Middle West. Farm prices for the major products of this region and incomes therefrom held to the lowest levels of the country's major product groups. Severe declines in value in several of the Mountain States, even when total rather than per-acre changes are compared, are likewise largely traceable to the drastic decline in cattle and grain prices, particularly in wheat, and to droughts. In an area in western Kansas, however, values either held up relatively well or increased. At the same time the acreage in wheat increased. Cutting of costs by use of the combine and other power machinery was a large factor. This, together with the even more depressed conditions in the cattle industry, stimulated the breaking of former grazing lands and planting them to wheat as the better alternative.

A relationship between the change in land values and in the prices of products was observable during both the war and postwar period. For example, of the three groups, cotton, meat animals and grains (combined), and dairy and poultry products (combined), relative to pre-war prices, the first increased most in the war period, the second somewhat less, the last considerably the least of all. Farm real estate value averages for the Cotton Belt, the midwestern grain and livestock States, and the northeast dairy States increased in the same way. Taking 1919–20 prices as a base of comparison, dairy and poultry products thereafter fell least, cotton more, but the meat-animal and grain group most. Farm real estate values in the respective regions in which these provide the principal sources of income, moved likewise.

Declining Downward Trend

With respect not to extent of change, but to the year-to-year trend, it is significant to note that for only two of the nine geographical divisions of the country did the averages up to March 1, 1926, still show a pronounced downward trend. These two were the East North Central and the West North Central sections. In the remaining seven divisions, the averages in the New England, Middle Atlantic, South Atlantic, and West South Central sections had for several years shown a tendency to go no lower and, with the possible exception of the South Atlantic, had even shown some tendency to move into higher ground. In the East South Central, Mountain, and Pacific divisions, the trend of the averages, as far as can be told now, appears to have nearly reached stability in adjustment to prevailing conditions.

E. H. Wiecking.

LAW of Diminishing Returns in Farm Business A given amount of labor and fertilizer will produce some kind of a yield of practically all crops. But if the amount of labor or fertilizer, or both, be doubled, the yield will in general be increased, but not in proportion to the increase in expenditure of labor and material. In general, each additional unit of fertilizer applied causes an increase in yield which is a certain percentage of the increase caused by the preceding unit.

For instance, in the case illustrated in Table 16, an application of 30 pounds of bone meal per acre for wheat in southeastern Kansas raised the yield from 10.6 to 14.9 bushels, an increase of 4.3 bushels. The addition of another 30 pounds of bone meal produced an additional increase in yield amounting to 56.53 per cent of 4.3 bushels, or 2.4 bushels. An application of an additional 30 pounds produced an increase amounting to 56.53 per cent of that due to the second 30 pounds, and so on. The sixth 30-pound application caused an increase in yield amounting to only 0.3 bushel.

TABLE 16.—*The effect of bone meal upon the yield of wheat in southeastern Kansas*

Pounds of bone meal	Yield	Increase	Value of increase at—		
			$1.00	$1.20	$1.40
	Bushels	*Bushels*			
0	10.6				
30	14.9	4.3	$4.30	$5.16	$6.02
60	17.3	2.4	2.40	2.88	3.36
90	18.7	1.4	1.40	1.68	1.96
120	19.5	.8	.80	.96	1.12
150	19.9	.4	.40	.48	.56
180	20.2	.3	.30	.36	.42
Optimum pounds of bone meal			106	116	124

The increments in yield given in the third column of Table 16 constitute a decreasing geometric series, each term after the first being 56.53 per cent of the preceding term. This is the general result that has been found in experimental work both with plants and animals, though the percentage of the increase caused by a given unit application, as compared with the preceding unit, varies widely with conditions.

The last three columns of Table 16 give the financial results. The value of wheat given in the headings of these columns take no account of the increase in cost of harvesting and marketing due to increase in yield. But this discrepancy in the case of wheat is a small one. The cost of 30 pounds of bone meal is estimated to be 75 cents. The third column from the last shows that increasing the application from 90 to 120 pounds will produce an additional 80 cents worth of wheat, which shows a profit of 5 cents from the increased application. But the profit is made from the first half of this extra 30 pounds, and there is a loss on the second half. The profit stops at an application of 106 pounds per acre. With wheat at $1.20 a bushel the most profitable application is 116 pounds, and with wheat $1.40 it is 124 pounds of bone meal under the conditions of this experiment.

Applies to Livestock Feeding

The same law applies to the feeding of animals. Table 17 and Figure 133 illustrate the results with hogs. The calculations in this table are based on Henry and Morrison's summary of experiment station work with hog feeding. It is assumed that the hogs are fed a ration of corn and tankage, the tankage constituting 10 per cent of the ration. The second and third columns of the table show respectively the bushels of corn and pounds of tankage consumed by

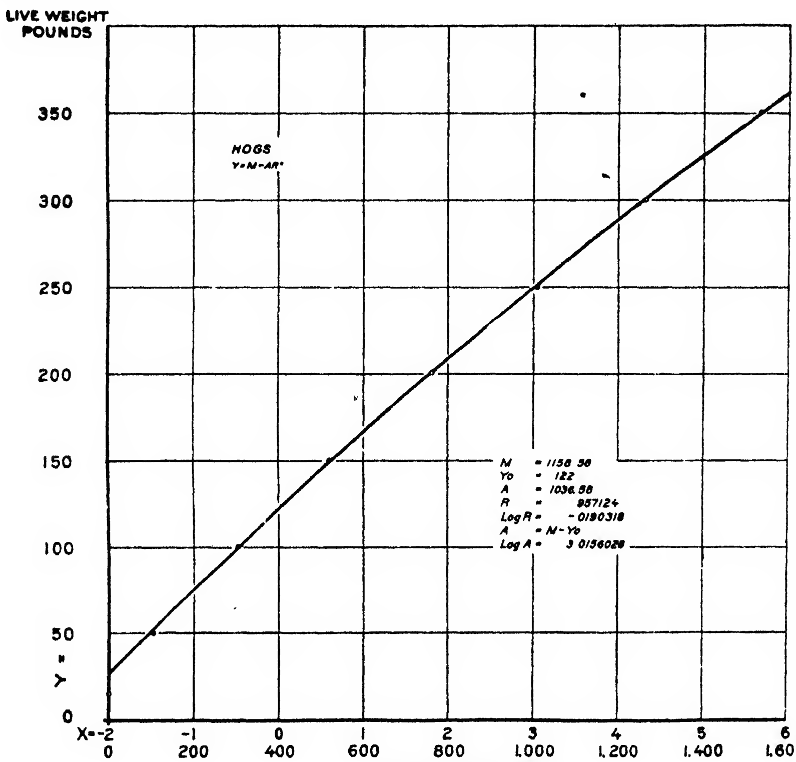

FIG. 133.—Gains in hog feeding calculated from the formula for the law of diminishing returns

hogs after reaching a weight of 100 pounds in attaining the weights given in the first column of the table. The fourth column shows the cost of the pig and the feed consumed in attaining each of these weights. The fifth column shows the market price of the animal per pound. It is assumed that the 100-pound pig is worth 10 cents a pound and that as he increases in weight the price per pound increases until at a weight of 200 pounds the pig is worth 12 cents a pound. As the weight increases beyond this the price is assumed to fall, as indicated in column 5. Column 7 gives the income over cost of pig and of feed. The maximum income over cost occurs at about 200 to 225 pounds weight.

TABLE 17.—*The cost and profit of feeding 100-pound hogs to given weights*

[Conditions: Pigs weighing 100 pounds at start, and worth $10; corn on hand—20 bushels per head, worth 84 cents a bushel; tankage, 10 per cent of ration, cost 3½ cents a pound]

Weight of hog	Feed consumed to date		Cost of pig and feed to date	Value of hog per pound	Value of hog	Income over cost pig and of feed	Received for 20 bushels of corn			Received per bushel
	Corn	Tankage					Fed	Not fed	Total	
Lbs.	*Bus.*	*Lbs.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
100			10.00	0.10	10.00	0.00	0.00	16.80	16.80	0.840
125	1.75	10.872	11.63	.105	13.12	1.49	2.77	15.33	18.10	.905
150	3.55	22.092	13.31	.11	16.50	3.19	5.78	13.82	19.60	.980
175	5.39	33.552	15.03	.115	20.12	5.09	9.02	12.27	21.30	1.065
200	7.28	45.308	16.80	.12	24.00	7.20	12.53	10.68	23.21	1.1605
225	9.22	57.376	18.61	.115	25.87	7.26	14.01	9.06	23.07	1.1535
250	11.21	69.770	20.47	.11	27.50	7.03	15.23	7.[illegible]	22.61	1.1305
275	13.26	82.510	22.38	.105	28.87	6.49	16.19	5.66	21.85	1.0925
300	15.37	95.616	24.34	.10	30.00	5.66	16.89	3.89	20.78	1.039
325	17.54	109.110	26.37	.095	30.87	4.50	17.32	2.07	19.39	.9695
350	19.77	123.016	28.45	.09	31.50	3.05	17.65	.19	17.84	.892

In making the computations in the last four columns of the table it is assumed that the feeder has 20 bushels of corn for each hog on feed. These columns show the amount that would be received for this 20 bushels of corn if the feeding operations were stopped at the various weights given in the first column of the table. Here, again, the largest income from the corn is obtained by feeding the pig to a weight of from 200 to 225 bushels.

Price Changes a Factor

A change in the prices in column 5 would, of course, change this most profitable weight to which to carry the fattening hog. But the first three columns of the table would remain as they are, and anyone proficient in arithmetic could figure the remaining columns for any price data inserted in column 5.

Figure 133 shows the rate of gain of the hogs. The small dots represent the figures given by Henry and Morrison. The graph shows the gains calculated from the formula for the law of diminishing returns. It is seen after the pig reaches a weight of about 50 pounds his actual gains conform very closely to this law. Below 50 pounds the gains are more rapid than called for by the curve, a fact to be attributed to the milk the pig obtains at that time.

W. J. SPILLMAN.

LAW and the Farmer's Business It was recognized at an early date that aid should be given to agriculture by law. Prior to 1862 some laws beneficial to the farmer were passed by Congress, but not until that year was a law passed creating a distinct organization known as the Department of Agriculture, the general design and duties of which were to acquire and diffuse among the people of the United States useful information on subjects connected with agriculture and to procure and distribute seeds and plants. Since that time a vast amount of

legislation has been enacted having for its aim the betterment of agricultural conditions. Many of these laws, regulatory in nature, have led to numerous legal controversies. The activities of the department have grown immensely, and the variety of legal questions which are constantly arising relating to the enforcement of the laws, regulations, and the management of the property of the United States entrusted to the department is astounding to the uninitiated.

The appropriation act of 1911 provided for the conduct of the legal work of the department. A corps of lawyers is maintained to carry out the work under the supervision of the solicitor. The organization is divided into sections, each of which specializes in certain activities of the department. In this manner the office seeks to be in a position to give expert advice on any legal question which may arise. Some of the assistants to the solicitor are located permanently away from Washington in order that they may be in personal contact with those representatives of the department who may need their aid. In certain sections of the country large areas of land are purchased by the United States through the agency of the Department of Agriculture. To facilitate these transactions title attorneys are stationed at convenient points.

Court Aid Must Be Invoked

The greater percentage of matters such as the construction of statutes administered by the department and the preparation of legal papers submitted to the office are disposed of within the organization. In many instances, however, it is necessary to seek the aid of the courts in enforcing the rights of the Government, in which event the cases are prepared for prosecution by the department's legal force and assistance is given to the various United States attorneys in their presentation to the courts.

Generally speaking, corrective or regulatory laws are not passed by Congress unless conditions warrant their enactment and there is a demand for relief. Such situations are not born over night but ordinarily grow during a span of years, due to the failure of persons concerned to adopt measures to remedy unfair or undesirable conditions. As time passes, these conditions one by one are dealt with by Congress. It is of interest to observe some of these efforts to assist the agricultural interests and the results attained in a legal sense.

In 1916 it was recognized by treaty between the United States and Great Britain that many species of birds, in their annual migrations, traversed parts both of the United States and Canada, and that they were of great value, among other things, in destroying insects injurious to vegetation. These birds were declared to be in danger of extermination through lack of adequate protection. Provision for their protection was made by the treaty and the migratory bird treaty act passed by Congress on July 3, 1918. The right of the Federal Government so to act was questioned by the State of Missouri on the ground that the treaty and the legislation were contrary to the Constitution of the United States, in that they invaded the sovereign rights of the State. The Supreme Court of the United States upheld the treaty and the act of Congress passed in aid

thereof and stated that it saw nothing in the Constitution which would compel the Government to sit by while a food supply is cut off and the protectors of our forests and crops destroyed. (Missouri *v.* Holland, 252 U. S. 416.)

Grain Futures Decision

It was very generally considered that numerous transactions involving the future delivery of grain as conducted on boards of trade caused sudden and unreasonable fluctuations in prices, detrimental to both the producers and consumers of grain. By the grain futures act of 1922, Congress recognized this to be a fact and provided for the regulation of transactions in grain futures in such a manner as to remedy the undesirable conditions. This action was taken under the commerce clause of the Federal Constitution. Immediately efforts were made to defeat the purposes of the legislation by enjoining the Secretary of Agriculture and other officers from carrying out the provisions of the act. The Supreme Court of the United States, however, stated that Congress had reasonably declared the fluctuation in prices of grain due to transactions in futures a burden on interstate commerce, and held that the act was clearly within the regulatory powers of Congress. (Chicago Board of Trade *v.* Olsen, 262 U. S. 1.)

Legislation relating to foods and drugs is general in the States. The Federal legislation on this subject is administered by the United States Department of Agriculture. It condemns every statement, design and device which may mislead or deceive. The law was enacted to enable purchasers to buy articles for what they really are. An interesting example exists in the case of vinegar labeled as "Apple Cider Vinegar Made From Selected Apples," the fact being that the product was made from evaporated apples. The Supreme Court of the United States held that the label was misleading to the public, and a misbranding under the act. It was said that an article must be the identical thing which the branding indicates it to be, irrespective of its merit. (United States *v.* 95 Barrels of Vinegar, 265 U. S. 438.)

The administration of the packers and stockyards act of 1921 is of considerable interest. This act was passed to secure the free and unburdened flow of livestock from the ranges and farms to the consumers of meat and meat products, or still as livestock to other parts of the country.

Packing Monopoly Feared

The monopoly of the packing industry was the chief evil feared by Congress, since such monopoly enabled them unduly and arbitrarily to lower prices to the shipper who sold or to increase the price to the consumer who bought. Then it was desired to provide against the exorbitant charges, duplication of commissions, and deceptive practices in the passage of livestock through the stockyards, made possible by collusion between the stockyards, the commission men, the packers, and the dealers. It is readily seen that any expenses incurred in the handling of the stock necessarily reduces the price paid the shipper or farmer and increases the price to be paid

by the consumer. It was realized by Congress that the shipper of livestock, being generally far away, was not in a position to protect his interests, being dependent upon the commission men.

The packers and stockyards act treats the stockyards of the country as great national public utilities, and regulates their conduct under the commerce clause of the Federal Constitution. As is often the case in instances of national progress, the constitutional authority of Congress so to legislate was questioned on the ground that the business conducted was not a part of interstate commerce and therefore not subject to regulation by Congress. But the Supreme Court of the United States called attention to the fact that the stockyards are not a place of rest or final destination of the livestock. Thousands of head of cattle arrive each day and must be promptly disposed of to give place to the constantly flowing traffic. The court likened the stockyards to a throat through which the current flows, and held that the transactions which occur therein are only incident to this current from the West to the East and from one State to another, and that such transactions can not be separated from the movement to which they contribute, and necessarily take on its character—that is to say, the character of interstate commerce. The constitutionality of the law was upheld. (Stafford *v.* Wallace, 258 U. S. 495.)

Grain Grading Practices

For a number of years prior to 1916 the farmers of the West were dissatisfied with the practices attending the grading of grain at the great terminal markets. This condition led to the passage of the Unied States grain standards act, which had for its object the grading of grain in interstate or foreign commerce under Federal supervision. This law has been of exceptional help to producers and consumers of grain. In 1922 the State of North Dakota passed a law which prevented the buying of wheat by grade except under certain prescribed conditions. This act was attacked in the courts by grain buyers on the ground that it burdened interstate commerce and was in conflict with the United States grain standards act. The court found that 90 per cent of the wheat produced in the State was shipped in interstate commerce, rendering the control of the business of concern to the people of other States as well as to those of North Dakota. The State law was held unconstitutional. (Shafer *v.* Farmers Grain Co., of Embden, 268 U. S. 189.)

The department has encountered more or less difficulty in cattle-tick eradication. At times the dipping of cattle in vats has been opposed to such an extent by the owners as to result in the most serious consequences. In Echols County, Ga., where members of the Bureau of Animal Industry were engaged in supervising the dipping by State officials of tick-infested cattle, the opposition resulted in the violent death of one employee of the department and the wounding of others. Certain persons were indicted for conspiracy to assault or interfere with Government officers, and their conviction was upheld by the Supreme Court of the United States. Among other things, the defendants urged that no showing had been made that the cattle involved were the subject-matter of interstate commerce and liable to supervision by the Secretary of Agriculture. The court said, how-

ever, that the pertinent laws and regulations were intended to prevent the spread of cattle disease from one State to another, which necessarily meant the interstate movement of diseased cattle; so that the duties interfered with were a part of the quarantine measures reasonably adopted to prevent the spread of animal disease in interstate commerce. (Thornton et al. *v.* United States, 46 Supreme Court Reporter 585.)

Cases Cited Are Examples Only

Only a brief idea of the problems confronting the legal force of the department is possible in the limited space here allotted. Those above are referred to not because they are exceptional, but because they offer fine examples of the importance of the questions considered. The Department of Agriculture is a large organization and controls considerable property, the protection of which involves the United States in a varied assortment of legal actions. The files of the solicitor's office are rich in records relating to a variety of matters unusual in any one legal organization, dealing, as they do, with questions of statutory construction, constitutional law, criminal law, regulatory law, and property rights in general.

H. N. Foss.

LEATHER Damaged by Impure Air

Leather bookbindings, leather upholstery, and leather bags and cases last longer in some parts of the country than in others. Research studies recently conducted by the Bureau of Chemistry have shown that the chemicals which pollute the air about our large industrial centers hasten the deterioration of certain kinds of leather.

In the course of this investigation a large number of worn leather bookbindings were examined and analyzed chemically. The leather of each binding was divided in accordance with the plan given in Figure 134, which shows a book lying face downward. A and B are the side portions of the cover and C is the back.

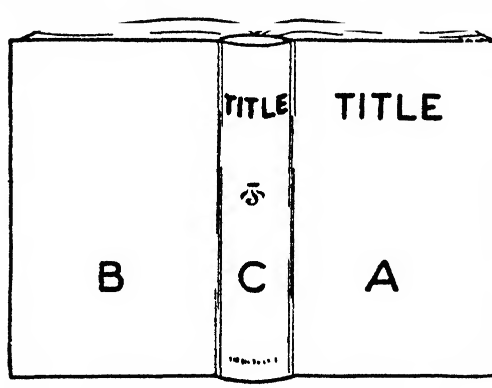

Fig. 134.—Book cover lying face down. A, right side cover; B, left side cover; C, back of cover

Many cases of rapid decay were found. Often the leather in the back, C, was in a powdery condition and could be easily rubbed off, torn, or cracked, while the sides, A and B, of the same binding showed very little decay. Figure 135 shows typical instances of this condition.

Now, the cover of a leather-bound book is one continuous piece of leather, practically uniform throughout when new. The marked differences developing with time in the condition and composition of different parts of this piece of leather must be the result of

unequal service conditions of one kind or another. In the case of books kept on shelves the most decided inequality is exposure. The back of the binding is very much more exposed to the light and the air than the sides. A comparison of the deterioration of these two

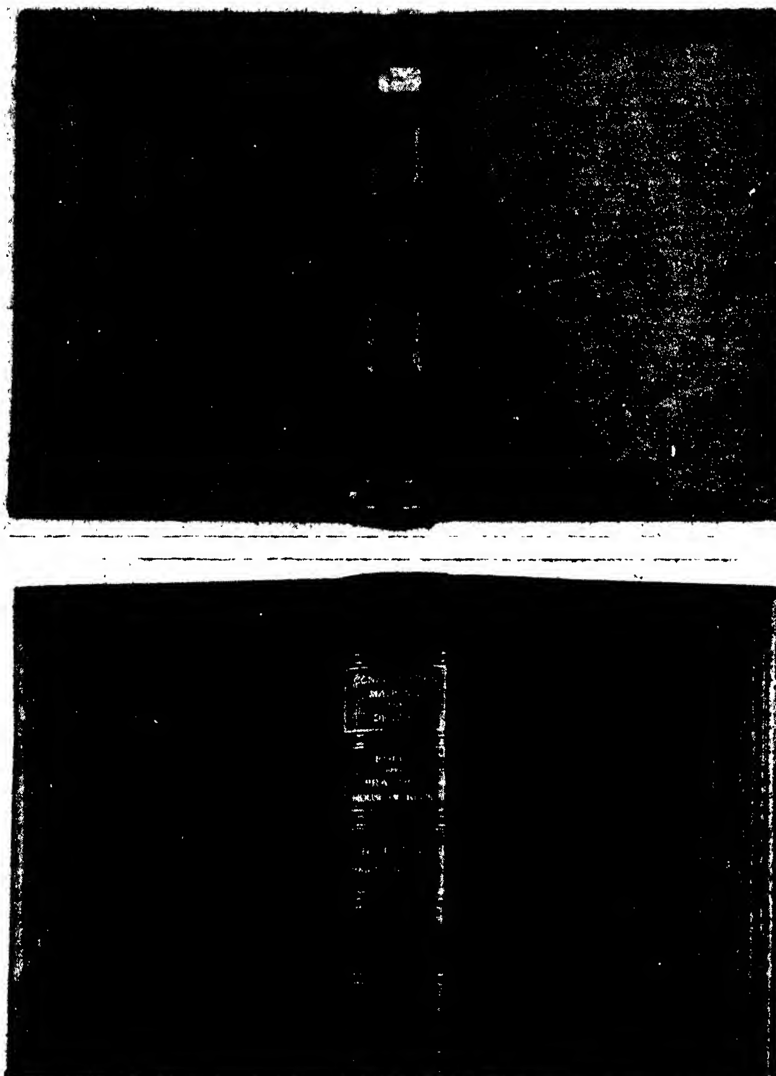

FIG. 135.—Shelf-filed books, showing advanced stage of deterioration of the leather in the back of the binding

parts, then, should throw some light on the effect of the degree of exposure.

Examination showed that the back, C, the most exposed part, had deteriorated most. Chemical analysis showed that it also had the highest acidity, the highest sulphate content, and the greatest

modification of originally insoluble leather substance into water-soluble nitrogen compounds, or decomposition products of leather.

Both light and atmosphere are involved in deterioration from exposure. It is difficult to determine the exact rôle played by each. Daylight, although known to be harmful to leather, can not alone be held responsible for the increase of certain constituents of the leather, notably acid and sulphates, in the more deteriorated part of the binding. This increase must be due to the absorption of something from the air. There can be but little doubt from the data obtained that harmful sulphurous and acidic impurities, taken up in destructive quantities from a polluted atmosphere, are responsible for part of the deterioration. This is but a natural expansion of the old " gas-light " theory of the famous scientist Michael Faraday, who as early as 1842 developed a theory pointing to the sulphur products from incomplete burning of illuminating gas, coupled with poor ventilation, as the cause of rapid deterioration. The adherents of this theory, however, limited the corrosive air to the space lighted by gas. It has now been shown that the space must be enlarged to include our usually polluted atmosphere.

The pollution of the atmosphere is often greater than is generally appreciated. W. F. M. Goss says: "Gaseous compounds of sulphur are products of combustion * * *. Sulphur compounds eventually are converted into sulphuric acid * * *. Sulphuric acid tends to exert an important influence in the disintegration of building materials of all kinds and produces deleterious effects upon furnishings, clothing, and merchandise." R. E. Swain states that "coal, on the one hand, and sulphur-containing ores, on the other, are easily foremost as ultimate sources of the substances which concern us most in atmospheric pollution. Loss of fuel from incomplete combustion represents much more of an economic loss than simply one of energy, for it clouds the atmosphere over our great cities, does extensive damage to buildings, furnishings, and merchandise, and leads to widespread personal loss and discomfort." The sanitary commission on air pollution, of Manchester, England, states: "If we draw a circle of a mile in radius with the town hall (Manchester) as center, about 195 tons of impurities would be collected during the month (July) from this area."

Atmospheric pollution is not the only cause of rapid deterioration of leather. Other factors, such as the tannage, the original composition of the leather, particularly its acidity, the oiling and greasing, and finishing undoubtedly play a part also.

The results of the research work done in the Bureau of Chemistry show that one way to prolong the life of leather is to prevent the absorption of atmospheric impurities. Coatings and finishes will help in proportion to their impermeability, permanence, and effect upon the leather. Many oils and greases, especially castor and neat's-foot oils, alone or mixed with tallow or lanolin, and many waxes are useful for this purpose because they counteract to some extent the gaseous impurities of the air and help to keep them from penetrating into the leather fibers. At the same time they provide "nourishment" for the leather.

The results of this work do not apply to bookbinding leathers alone but to all other leathers of a similar nature intended for long

service, such as upholstery leather and bag and case leathers. They should bring about a better appreciation of the rôle of atmospheric corrosion in the deterioration of leather and, as a consequence, the further development and application of treatments, either during the manufacture of the leather or during its service, that will aid materially in its preservation against such corrosion.

F. P. Veitch.
R. W. Frey.

LEGUME Inoculation and Fixation of Air Nitrogen Nearly 2,000 years ago historians recorded the observation that better crops of grain were obtained when the seed was planted in soil which had just previously borne a crop of legumes. Here began our written knowledge of crop rotation. Although at this time and for many years afterwards nothing was known about bacteria or nitrogen gas, the beneficial effect of nitrogen fixation of legumes in a rotation (vetches, beans, lupines, clovers, etc.) was early recognized. It is only within the last century that the agents concerned with legume plants in the utilization of atmospheric nitrogen have been discovered and are now known to be minute soil-inhabiting plants which are called bacteria. When these bacteria come in contact with suitable legume roots in the soil they enter and cause the plant to form growths in the course of their multiplication which are commonly referred to as nodules or tubercles. These growths are very characteristic in outward appearance, varying mainly on account of the plant on which they occur, although their external appearance is sometimes modified by soil conditions. Nodules being the evidence of nitrogen-fixation and of the presence of certain kinds of legume bacteria in a soil, are growths with which every farmer should make himself familiar.

Nature has distributed the legumes and their bacteria very liberally to the various soils throughout the world, but since the bacteria which will produce nodules on a particular legume will not necessarily produce them on another species, it does not always happen that the proper kind of nodule-forming bacteria are in the soil. Legumes are therefore classified on the basis of their ability to accommodate the same organisms in their roots. Thus, the nodule bacteria of the plants within each of the following four groups of legumes are considered the same for practical purposes: (1) Alfalfa, bur clover, and sweet clover; (2) crimson, red, and alsike clover; (3) cowpea, velvet bean, peanut and Lima bean; (4) vetch, garden pea, and sweet pea. The soy bean requires its own special nodule bacteria. With the modern interchange of legume seed between widely separated parts of the world and the development of conditions detrimental to nodule bacteria it is often necessary to bring them into a soil.

Acidity Should Be Corrected

If legume bacteria are lacking in a soil on account of soil conditions, as, for instance, soil acidity, this condition should be corrected before replenishing the supply of bacteria in this soil. The process of introducing nodule bacteria into the soil is commonly called in-

oculation. The material for this purpose is obtainable from two general sources: (1) artificially prepared cultures and (2) field soil in which the proper bacteria are known to be present. It is possible by careful laboratory work to take the bacteria from nodules and to propagate them on sterilized artificial food in the absence of other bacteria. Inoculating material prepared in this manner is obtainable from various governmental and commercial agencies. On the other hand, soil known to contain the proper bacteria and free from diseases and pests, makes an excellent source of inoculating material for the farmer. At times it may be advisable to establish a source of bacteria on the farm by growing seed treated with pure culture on a small plot of soil. With this source at hand, the soil may be transferred to other fields as it is needed. When a soil is once seeded with the proper bacteria and it is maintained favorable to their growth with necessary additions of lime, fertilizers, and organic matter and an occasional growth of the legume on which they function, they should continue to live indefinitely in this soil.

After legume bacteria penetrate the roots they begin to draw nitrogen from the air and so alter it that the plant may absorb and utilize it in the building of tissues. While the bacteria are fixing nitrogen they draw on the plant roots for the carbohydrates, moisture, and minerals necessary for their growth. Through the work of these bacteria greater legume crops are produced, uniformly higher in nitrogen than most nonlegumes or legumes which do not have the benefit of this bacterial association.

Amount of Nitrogen Fixation Varies

The amount of nitrogen fixed by legumes and their bacteria varies with the species, the conditions, and the time of growth. Under favorable conditions a single crop of legumes may fix as much as 200 pounds nitrogen per acre in a year and a crop put on the soil to fill a gap for a short time may only add from 40 to 60 pounds per acre in a season. In the choice of legumes for planting, those which grow vigorously under the existing conditions and which meet the needs of the type of farming practiced should be considered.

The main part of the nitrogen fixed by legumes stays in the plant until it dies and decays, although in a dormant period of the plant or in extremely dry weather, a small amount of it may pass into the soil by the "sloughing off" of the nodules. The fate of the nitrogen in the legume crop is entirely dependent upon its utilization. The nitrogenous organic matter in the stubble as a rule remains in the soil where it rots and is thereby made available for subsequent non-legume crops. The greater part of the nitrogen in legumes is usually in the part that is cut for hay or seed.

LEWIS T. LEONARD.

LIMEQUAT: A New Hardy Ade Fruit

The peculiar zest of the juice of the West Indian lime makes it desirable that fruits of this type be grown over a much wider range than at present. Those familiar with citrus fruits know that the lime is the tenderest of all the commonly grown species of this group. It is frequently frozen severely even in southern

Florida, so that its culture is chiefly restricted to the keys along the Florida coast. It is not grown commercially in California at all.

In 1909, the senior writer originated a new type of citrus fruit by crossing the West Indian lime with the kumquat orange. The kumquat is one of the hardiest of the evergreen citrus fruit trees, and is also highly resistant to some of the diseases affecting the lime and other citrus varieties. The fruit, however, has little commercial value and is used chiefly for preserves, or for decorative purposes. These crosses resulted in a number of hybrids varying in character, but all producing fruits much like the lime in their acid quality.

The hybrid selected from among these as the most promising was the result of fertilizing the flowers of the common or West Indian lime with pollen of the round or Marumi kumquat. Since the cross was made at Eustis, Fla., the fruit has been named the Eustis limequat. It is strikingly beautiful in appearance, resembling the lime in size and texture, but with a light yellow color like that of the grapefruit. (Fig. 136.) It is thin-skinned but firm, very juicy, has few seeds, and the flavor, except when dead ripe, can scarcely be distinguished, even by an expert, from that of the true lime. The fruit develops its juice content while still green, so that, like the lime, it can and should be used while still partially green. The tree is evergreen, of rapid, upright growth, and with small, pointed leaves. The spines on the bearing twigs are very inconspicuous, a decided point in favor of this hybrid, contrasting with the viciously spiny character of the lime. The limequat is more or less everbearing, so that fruit is usually available for nearly six months of the year. It has proved itself adaptable over a wide range of territory, withstanding temperatures in northern Florida and Alabama as low as 17° F. without serious injury. Even where frozen back severely it usually makes a quick recovery and has the ability, like its kumquat parent, to produce fruit on new sprouts, so that a fair crop may be obtained even following a damaging freeze. While thus proven quite hardy, it also fruits well in warmer regions, being quite at home in southern Florida and even in tropical Honduras, where its vigor and freedom from disease furnishes a striking contrast to the

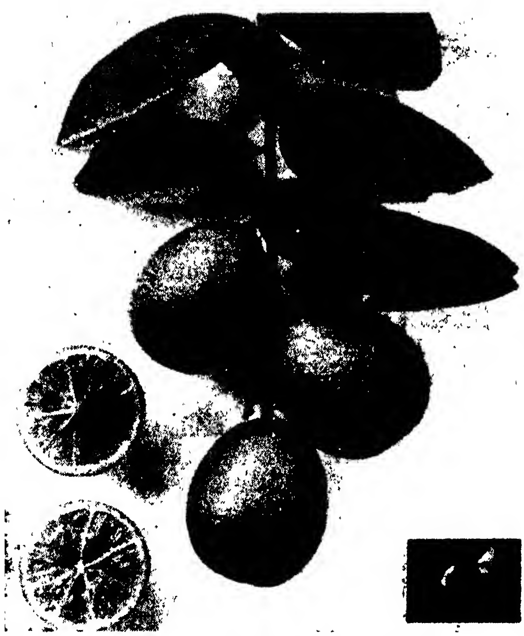

FIG. 136.—The Eustis limequat, natural size

true lime. It is entirely immune from "lime wither tip," a disease very destructive to the common lime crop. For budding, it has proved adapted to all the common citrus stocks except the sour orange; and it may be grown by rooting cuttings. Although it does not come true from seed, selected seedlings may produce very excellent trees. Nursery propagation is confined largely to the rough lemon stock for the warmer sections and the trifoliate orange for colder areas. Most of the larger citrus nurseries have undertaken the propagation of the limequat within the last few years.

Aside from its use in making ades, the limequat is excellent for marmalade, for preserves, and in the crystallized form, since the rind, like that of the kumquat, is edible. California lemons are not to be had in Florida, owing to quarantine restrictions to prevent the possible introduction of brown rot, while Sicilian lemons are expensive and obtainable only in the larger towns. Thus it often happens that a good acid citrus fruit for ade making, salads, or for flavoring is actually a scarcity even in citrus-growing territory. A more extended planting of the limequat in home gardens and small groves will supply this deficiency to a large extent, and may lead to the development of a moderate demand in more distant markets.

WALTER T. SWINGLE.
T. RALPH ROBINSON.

LIVESTOCK Estimating Work Much Enlarged

The activities of the department in estimating livestock production have been greatly enlarged during the last four years. Prior to 1922 the principal estimates were of the numbers of animals on farms January 1 each year, number of brood sows April 1, number of stock hogs September 1, a partial estimate of livestock losses in April, and an estimate of wool production.

No attempt was made to estimate actual annual livestock production. The only measure was the change in inventory numbers as of January 1—admittedly a very inadequate basis. No official information was available to producers or to the trade in advance of the marketing period as to the size of the pig or lamb crops, number of cattle and sheep on feed for market, probable market supplies over seasonal periods, or condition of livestock to be marketed. Practically the only information as to these items was that coming through trade sources; this was fragmentary, unorganized, often conflicting and based largely on biased opinion evidence.

The following list of livestock reports now being issued or to be issued indicates the progress that has been made in furnishing needed information as to various phases of livestock production. Chronologically arranged, these reports are:

January

Annual inventory of numbers of livestock on farms by species, showing class and age separation.

Estimate of the amount and value of livestock production during the preceding year, with annual balance sheets showing items of increase and decrease.

Report of the December 1 pig survey for the United States, showing the size of the fall pig crop and number of sows bred to farrow in the following spring.

Estimate of cattle and sheep on feed for market as of January 1. This to be preceded by reports in October, November, and December on conditions influencing the feeding situation.

Estimate of the calf crop and revised estimate of the lamb crop of the preceeding year.

Revised estimate of wool production and weight per fleece of preceding year.

Estimate of livestock losses from all causes for preceding year.

Condition of range cattle and sheep in western range States. This is a regular monthly report throughout the year.

Weekly movement of fed lambs to market in Western States, continued until May.

March

Estimate of early lamb crop and market movement of spring lambs from early-lamb States, including prospective movement of grass-fat sheep from Texas.

April

Estimate of cattle on feed for market in the Corn Belt States on April 1.

Estimate of supply of cattle to be marketed during the spring months from Texas, New Mexico, and Arizona.

Report on pasture conditions in the Flint Hills and Osage pastures.

Report on the development of the early lamb crop during March.

May

Final report on development of early-lamb crop and estimate of market movement.

June

Report of the June 1 pig survey for the Corn-Belt States showing size of the spring pig crop and the number of sows bred to farrow the following fall.

Estimate of the movement of cattle into the Flint Hills and Osage pastures.

July

Report of the June 1 pig survey for the United States.

Estimate of the size of the total lamb crop in the United States and of sheep losses during first six months of the year in the range States.

Preliminary estimate of wool production, with sheep shorn and weight per fleece.

August

Estimate of number of sheep and lambs to be shipped from range States during the fall and early winter.

Report on conditions in the range States that will affect the number of cattle to be marketed during the fall and early winter.

October and November

Reports giving movement of feeder cattle and sheep into feeding States, corn, and other feed prospects, prices of cattle and feed, preliminary to the January 1 feeding estimates.

December

Report of the December 1 pig survey for the Corn-Belt States.
Report on the feeding situation similar to that in October and November.

C. L. HARLAN.

LIVESTOCK Judging Aided by Use of Camera Type in dairy cattle is a much discussed topic wherever breeders assemble. The climax of these discussions is reached in the show ring, which is the arena of final decision. It is there that the keenest interest abounds when representative cattle from many herds are gathered in competition for the

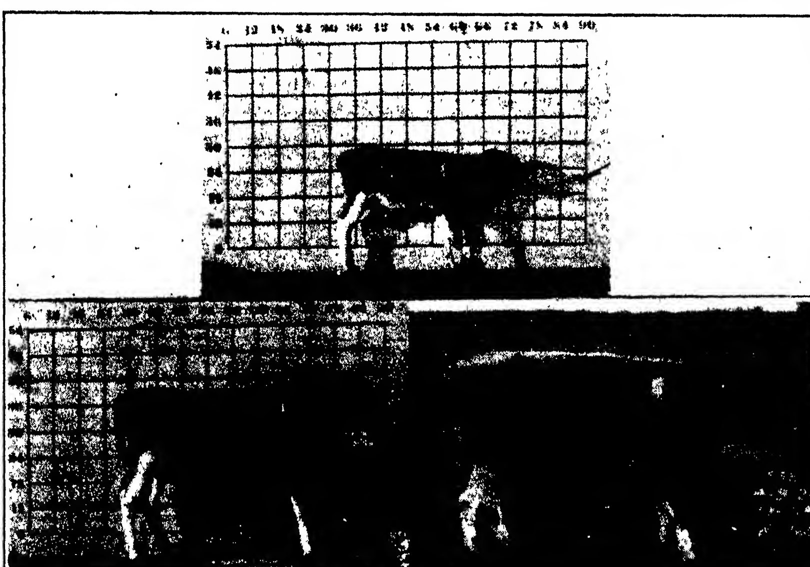

FIG. 137.—Changes in levelness of rump at different stages of development

awards of the judges. These men are trained to weigh and consider those points which make up the type desired in the animals of the various breeds.

Official judging of dairy cattle is nearly all done during the two months of late summer and early fall. Great reputations are frequently made by winnings during a single show season, and now and

then young animals reach the heights of fame by entering the championship classes.

One interesting feature of type in dairy cattle which is not brought out by present show methods is the fact that some of these points which make up desirable type are subject to change during rela-

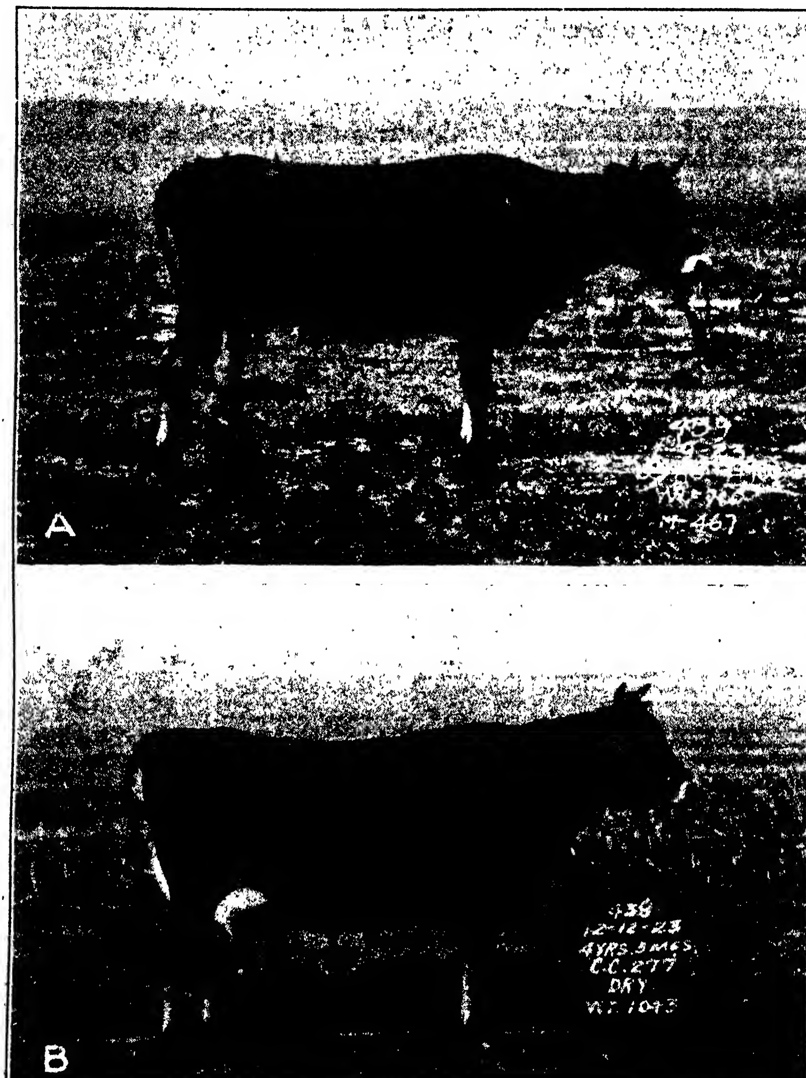

FIG. 138.—Effect of physical condition of cow on general appearance

tively short periods of time. Men's memories are faulty, and then, too, new favorites are crowding to the fore and blotting out mental pictures of former champions.

The camera is serving the useful purpose of recording those changes in a permanent way. By systematic photography it is

possible to place these variations in type beyond the vagaries of the human memory.

One point which is strongly emphasized by show-ring judges and cattle fanciers is the levelness of the rump. No one seems to know why a rump is level except that it grew that way. The fact is, however, that the level rump may become sloping and that the opposite may also occur.

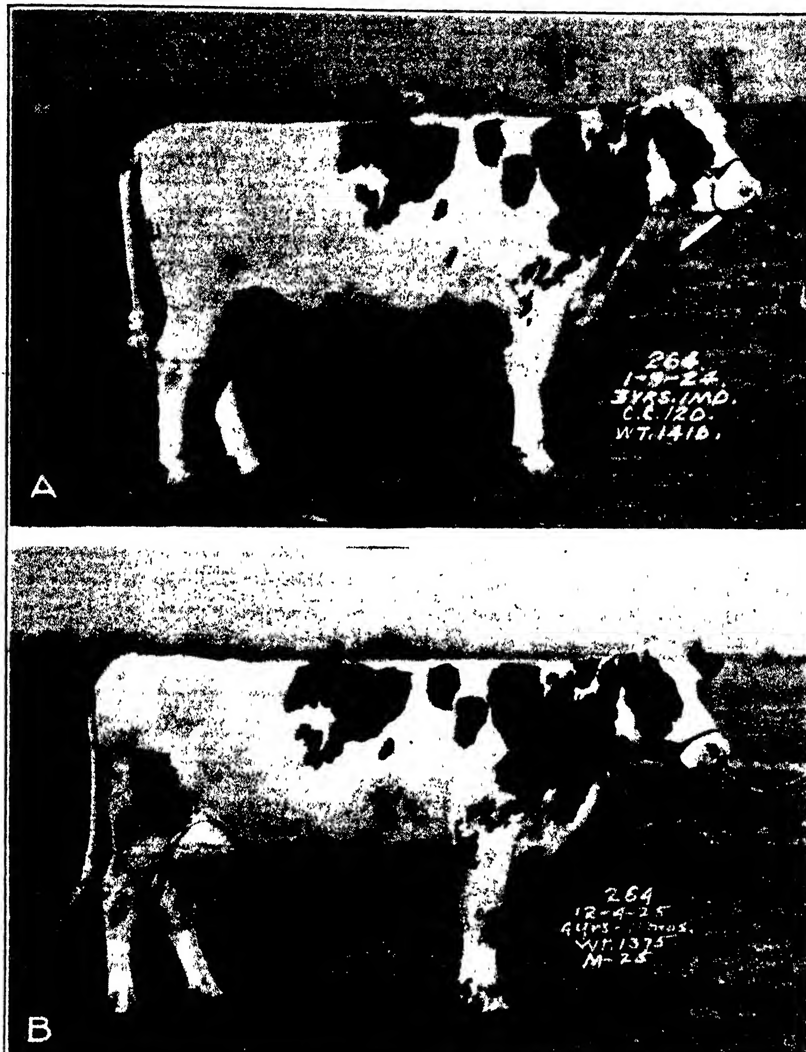

FIG. 139.—Change in appearance of animal produced by breeding

Figure 137 illustrates the changes which have occurred during the growth of an animal at the department's dairy farm at Beltsville, Md. The physical condition of cows also has a bearing on appearance or type, as is shown in Figure 138. Levelness of the udder is

often considered in judging cattle, and here again time and condition work their changes. Tilted udders sometimes become level, and the opposite also occurs. Delayed breeding has been known to alter the appearance of heifers. This condition may correct itself after normal calving, as is shown in Figure 139.

Aside from the foregoing uses, the camera has a far wider field of usefulness when employed in conjunction with studies in dairy-cattle breeding. By taking photographs at regular intervals and according to a plan which makes all pictures comparable, it is possible to make comparisons of animals in various generations at the same ages, between individuals of the same generation at the same age, and also to study the changes which occur during the development of each animal.

Comparability and uniformity are attained by using the same camera in a fixed place and posing the animals in a standard position at a uniform distance from the camera.

M. H. FOHRMAN.

LIVESTOCK Market News Distribution With the active cooperation of State departments of agriculture at nine markets, the Federal market news service on livestock, meats, and wool to-day embraces 30 markets. Livestock markets covered in this service are Atlanta, Boston (Brighton market), Buffalo, Chicago, Cincinnati, Cleveland, Denver, Fort Worth, Indianapolis, Jersey City, Kansas City, Lancaster, Pa., Los Angeles, National Stock Yards, Ill., New York City (Sixtieth Street market), Ogden, Pittsburgh, Portland, Richmond, Salt Lake City, San Francisco, South Omaha, South St. Joseph, South St. Paul, and Wichita. Meat markets are Boston, Chicago, New York City, and Philadelphia. The wool market is Boston.

Through cooperative arrangements with commercial agencies, considerable livestock market information is also obtained daily from Baltimore and Sioux City. Extension of the service during the current fiscal year included the opening of livestock offices at Buffalo, Cincinnati, Cleveland, Indianapolis, Pittsburgh, and St. Joseph.

Designed to meet demands for timely, thorough, accurate, and unbiased market news, gathered and disseminated by a neutral agency, the service inaugurated on meats at the three largest meat-consuming centers, in 1917, and speedily expanded to embrace service on livestock and meats at Chicago and on livestock at other important midwestern markets, has reached the point where it may be truly said to be nationwide in scope.

In furtherance of its efforts to provide prompt, reliable, and properly interpretable market information on these important commodities, the Bureau of Agricultural Economics, under which the market news service is conducted, adopted, at the inception of the service, tentative class and grade standards by means of which markets in all sections of the country could be reported in a uniform manner. Through persistent investigation, research, and demonstration and through constant use, the tentative standards have been refined and improved from time to time, and during the fiscal year 1926 those covering slaughter cattle, beef, and wool were promulgated by the Secretary of Agriculture as official United States standards.

Through this means a slow, though steady, *elimination of indeterminate* grading, misleading or confusing classifications, and conflicting phraseology is being brought about.

Quick Dissemination Important

Next to accuracy, speed in dissemination is one of the most important features of this market news service. The backbone of the service, which provides for prompt interchange of market information between markets, is the leased telegraphic wire system, extending some 7,700 miles in length and connecting the majority of the market centers and Washington, where the headquarters of the service are located. Markets at which offices are maintained that are not at this

FIG. 140.—Checking beef prices and grades. Beef salesman (center) and branch house manager (right) discussing a sale with reporter (left)

time directly connected with the leased wire circuits are Buffalo, Cincinnati, Cleveland, Indianapolis, Los Angeles, Ogden, and Portland. Through cooperative arrangements with State and commercial agencies, the leased wire service covering livestock, meats and wool market information is also provided at Ames, Iowa; Columbus, Ohio; Hastings, Nebr.; Jefferson City, Mo.; Oklahoma City, Okla.; San Antonio, Tex.; and Stephens Point, Wis. At all of these points the information is made immediately available to the public by radio, telephone, the press, and by mail.

Market news by radio is becoming an increasingly important feature of the service. With three exceptions, reports of livestock, meat, and wool markets covered by the service are now being released by at least one local broadcasting station, some of the more important markets by several local stations and by a number of

stations other than those located at points where reporting offices are maintained.

The value of this method of news distribution, not only from the standpoint of furnishing prompt, dependable information but in actual dollars-and-cents savings, is being manifested daily. Wide and prompt dissemination of the market information is also obtained through daily and increasing use of it by the C. N. D. (commercial news despatch) service of the commercial telegraph companies, by the Associated Press, International News Service, United Press Associations, the daily, weekly and periodical news, trade, and agricultural press, and by mail from the various field stations.

Reports Sent Almost Hourly

In accordance with the urgent demands of the trade, and fully realizing the special value of quick service, reports are sent out

FIG. 141.—Watching a hog transaction. Seller (middle) argues over price and sort with buyer (right), while reporter (left) is silent observer

almost hourly from the larger centers, particularly in the case of livestock. Beginning with estimates of supplies at the various markets early in the morning, these releases are continued throughout the day, keeping in close touch with the many phases and developments of the market until the final close of trade. To permit of careful and valuable analyses of market trends, supply, and demand conditions, etc., voluminous statistical records embracing the fundamental facts at all markets are compiled and released.

Only a trained personnel can meet the strict requirements of this work. Accordingly, the division of livestock, meats, and wool has acquired for the market news service technical men who have practical experience. They have been carefully and uniformly trained for their special duties in accordance with plans having far-reaching benefits to the industry.

E. W. BAKER.

LIVESTOCK Market Statistics The need of accurate data was early recognized by the Department of Agriculture as a prerequisite to a careful study of the marketing of livestock and meats. It was hoped, as a result of this study, to devise better methods of marketing, which would tend to regulate market supplies, insure stable markets, and help the producer to determine in advance of shipment the kind and grade of stock in demand at the various markets and the exact times at which this demand was greatest and when it was the least urgent.

To this end records have been kept: (1) Of daily, weekly, and monthly livestock movements, including receipts, shipments, and slaughter at each of the livestock markets and the shipments by classes and weight groups of stockers and feeders from the central markets to the individual States; (2) of receipts of western dressed meats at the eastern markets, of stocks held in storage, and of imports and exports; and (3) of the number, average weight, and yield of livestock, by classes, slaughtered in the United States by months and years.

These data are the basis for estimating production and consumption and for determining the regions and seasons of greatest and least supplies.

Prior to the organization of this work by the Department of Agriculture, studies in comparative prices of livestock and meats were impracticable, for uniform grades did not exist and therefore the available price series were not comparable. For instance, prices quoted on beef cattle or butcher steers might apply to choice grade at one market and to common grade at another market.

Statements Published Daily

Since the establishment of the department's livestock and meat market news service, however, statements have been published daily showing price quotations by classes and grades of livestock at the principal livestock markets and of meats at Chicago and at three eastern markets. A careful record has been kept of these daily quotations and from them weekly and monthly averages have been computed by grades. These prices are now available for all of the more important markets over a period of years.

With the completion and general adoption of these standard classifications, making possible intensive studies of market preferences and net returns by grades, together with the livestock movements and supply, much has been accomplished toward determining, in advance, where and when the producer should sell his stock, and where, when, and what the feeder should buy.

E. M. Jordan.

LIVESTOCK Problems That Have Been Solved In reporting from year to year on livestock conditions surrounding the production, feeding, care, diseases, and parasites of animals, there sometimes appear to be but minor changes. But in contrasting the situation to-day with that of 10, 20, or 30 years ago, the real progress is plainly evident.

Stock raising is less hazardous and more of a substantial business than at any time in the past. Scientific and practical achievements have made it so.

The present definite knowledge concerning cattle-fever ticks and the systematic method of eradicating them are in striking contrast to " shotgun quarantine " methods of a generation ago on the part of northern cattlemen seeking to protect themselves against the " bloody murrain," as tick fever was called at the time. Hog cholera, though still a formidable disease, lacks the terror that it once had for swine growers. The most serious problem in that field now is some method of stabilizing production and use of serum. One remedy for such a condition in the future lies in a more general immunization of pigs, especially while they are young, for at that time the preventive treatment is most economical.

FIG. 142.—Swine raising is less hazardous than in former years. Though heavy losses still occur, hog men can readily control them by suitable precautions, such as immunizing pigs to prevent cholera and practicing swine sanitation to protect pigs from parasites

Sanitation Asserts Its Importance

Another current development is a more definite knowledge and utilization of sanitary methods than was prevalent a decade or more ago. Present-day stockmen are realizing that sanitation is more than visible cleanliness. It means the suppression by tested methods of infection by bacteria and parasites too small to be seen with the unaided eye. The newer system of swine sanitation, which has proved to be so helpful in reducing losses, illustrates the practical value of the few hours of care and of the additional equipment that so greatly enhances net returns.

Our knowledge of stock-poisoning plants and methods of management and prevention has increased remarkably in recent years. Persons who now suffer losses from stock-poisoning plants do so largely through failure to obtain the information that is available.

There is a large quantity of sound information now at hand on the value of improved breeding in increasing the sale value of animals raised. Heredity is a force constantly in operation but moving slowly. For that reason its effects are seldom observed or attract slight attention unless the results are presented more forcefully by suitable demonstrations.

From the few examples cited it is clear that the livestock industry is much better equipped to meet future problems that may arise than at any time in the past. Moreover, the advances made have consisted largely in the solution of fundamental problems and not merely in the adjustment of temporary troubles.

A Million Reactors Removed from Herds

Satisfactory as the outlook appears to be, a still more encouraging development is the current trend toward better teamwork among

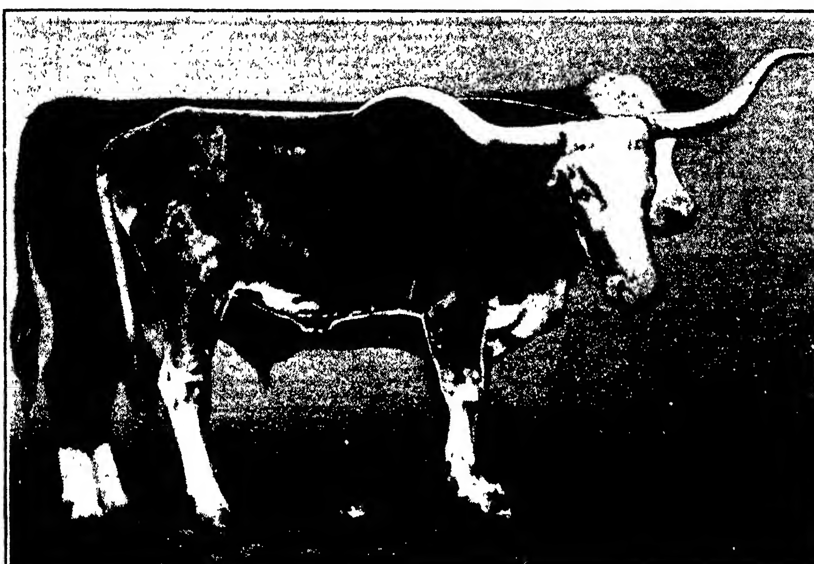

Fig. 143.—A study of the progress the cattle industry has made in improving the type of animals raised for beef

the various branches dealing with the production, handling, and sale of domestic animals. As the result of such teamwork more than a million tuberculous cattle have been sent to the shambles in less than 10 years. Even the most visionary optimist probably would not have ventured to predict such a result when cooperative tuberculosis-eradication work was undertaken in 1917.

Several other important cooperative projects relating to the betterment of our animal industry have developed in the last few years. One of these is the cooperative meat project to study factors influencing the quality and palatability of meat. Nineteen State experiment stations, representatives of the livestock and meat industries, and several bureaus of the United States Department of Agriculture are engaged in this important study. A similar, though less

extensive project, is the study, now in its seventh year, of factors causing the production of soft pork.

In various ways the department has gradually come into the possession of several experiment farms and field stations at which regional problems are being studied. In some cases the land was donated; in others it was made available by State officials for cooperative Federal and State projects. In the case of the extensive range livestock experiment station comprising 57,000 acres at Miles City, Mont. (fig. 144), the land, buildings, and equipment were transferred to the Department of Agriculture by the War Department. In other instances, as in Moultrie, Ga., where studies of livestock parasites began during the last fiscal year, many facilities were supplied by a cooperating commercial organization. Members of Congress have shown keen personal interest in the establishment of many of the cooperative stations and farms. All such facilities make possible a greater number and range of experiments.

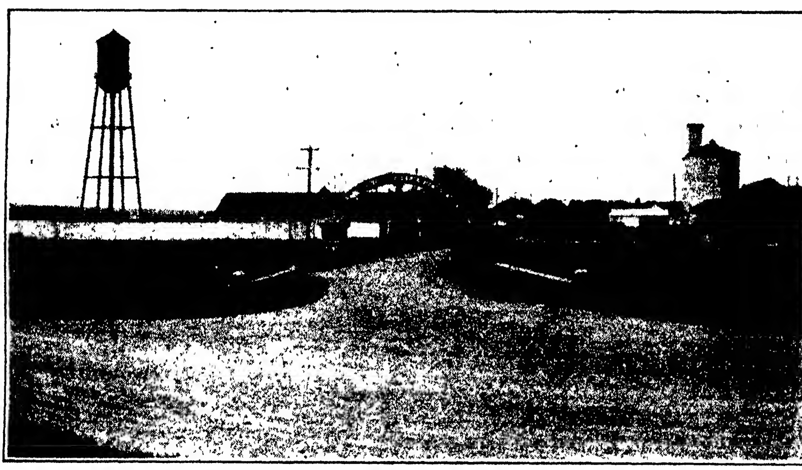

FIG. 144.—Entrance and part of the equipment at the U. S. Range Livestock Experiment Station at Miles City, Mont. Visitors are welcome at the various experiment farms and experiment stations of the Bureau of Animal Industry, many of which are operated in cooperation with State experiment stations

Credit Enough for All

In all this work there has been an effective combination of scientific training, practical experience, executive ability, funds, and other necessary factors. This diversity of resources naturally hastens progress and by reason of the contacts of each of the different interests there has arisen also a wider public interest in the work.

The benefits of mutual effort have brought about likewise an increasing willingness among the workers to share the credit for achievement, and in some cases even to let credit fall where it may. Cooperative investigations quickly show that the effort of any one group is too small to carry any given piece of work through to completion. Even the research worker, whose efforts are perhaps most intensive and are basically important, must depend on his colleagues for certain parts of his work, on livestock owners for the demonstration of results under farm conditions, and on field men and the press

for making the final results sufficiently well known to benefit the industry, which is the ultimate objective. Briefly, there is a growing and unselfish willingness to admit that "there is credit enough for all."

From the foregoing discussion the outlook for the animal industry of the United States is plainly favorable. Conflict of effort and strife among the various branches of the industry has been rapidly giving way to mutual efforts for a common goal. Hazards are fewer, and knowledge of means for reducing them and increasing net returns has been increasing gradually. In fact, the supply of useful information appears to have accumulated faster than the industry has absorbed it and used it for practical purposes. The intimate relation between the livestock industry and the country's food habits and its demands for leather, wool, and other products is obviously a complex economic study. But with population growing somewhat more rapidly than the number of animals in the country, the position of the industry with respect to demand for its products is well established.

JOHN R. MOHLER.

LIVESTOCK Reports Issued Weekly to Country Bankers A weekly livestock market review, prepared primarily for the use of country bankers and their patrons in the Corn Belt States, is one of the features of the market news service conducted by the Bureau of Agricultural Economics. At the present time approximately 400 banks are receiving such reports weekly from either the Chicago or the East St. Louis offices of the division of livestock, meats, and wool of the bureau.

Prior to the inauguration of this service several years ago, requests had come from several bankers, whose funds were used largely in financing livestock producers and feeders, for concise, readable, and dependable reviews of the livestock market which would keep them in touch, not only with the day-to-day developments but which would provide an authoritative source of information regarding supply, demand, and price conditions over a longer period, thereby indicating broad movements and general trends. In response to this demand, letters were sent to a large number of banks in livestock-producing areas, to determine whether or not there was a real need for a service of this kind. The response was prompt and showed beyond question that there was a widespread demand for such reports.

These "bankers special" livestock reviews, consisting of between 800 and 1,000 words, analyze and cover the principal features of the week's trading in cattle, hogs, and sheep. They are mimeographed and mailed each Thursday afternoon, in order that they may be received by the banks not later than Saturday morning. In most instances the reports are posted on bulletin boards or elsewhere and are consulted regularly by large numbers of stockmen and other patrons of the banks.

These reports are intended to supplement rather than supplant other and more timely reports prepared in the division, such as those disseminated every market day by radio, telegraph, the press, and the mail. In thus reviewing the market for an entire week a more comprehensive idea of underlying conditions can be obtained by the

readers than is possible through the medium of a record of each day's trading, with its frequent temporary fluctuations up and down the price scale, which often appear to have no definite trend in any direction.

J. A. BURGESS.

LONG-RANGE or Seasonal Weather Forecast Methods The principles underlying seasonal forecasts and those upon which daily forecasts are based, differ radically. The seasonal forecast does not, as many persons might suppose, involve simply an extension of the time covered by the daily forecast. Being based on different premises, it is itself totally different. We are confronted on the very threshold of the problem with the need of a full knowledge of the effects, over a period of months, which physical laws exert upon the atmosphere, of the sequences of world-wide weather they produce, and so on.

Such perfect knowledge, very far as yet from being within our grasp, would enable us, for example, to forecast seasonal rainfall; that is to compute the quantity and trace the course of the water vapor which is carried by the winds to the uttermost parts of the earth.

In the absence of perfect knowledge, seasonal forecasts must be based on such empirical rules (admittedly imperfect) as can be deduced from world-wide weather statistics. These rules may be considered under several groups:

Efforts have been made to predict the weather of the coming months from that of the month just past. Thus in 1904 the last third of May was unusually cold, giving rise to a belief that the remainder of the year would be like 1816, the "year without a summer." But statistical test showed that out of 156 Mays (long records at two stations), only 58 per cent preceded years of like character as to temperature. Nevertheless C. D. Reed of the Iowa climatological service has shown that the June mean temperature of Iowa can with considerable success be used to forecast that of the next following July, August, and September. European meteorologists have found that temperature tends to persist in the same sense; for example, there is more than an even chance that a "warm" month will be followed by a "warm" month, etc., but the relation is not sufficiently definite to be of much use in seasonal forecasting.

Immense effort has been devoted to search for periodicities in the weather. The search has thus far, however, not produced convincing results, because many of the so-called periods seem to be discernible only when changes in the weather so slight as to be of no practical importance are taken into consideration.. Moreover, the claim is made that the length of the period varies systematically—and this would further increase the complications of seasonal forecasting.

The Geographical Method

The method of geographical relations, so named for convenience, is based on the fact that weather travels from west to east. Through it, many students have tried to find a definite relation between the weather of a certain region at a certain time, and that of a distant

place two to six months later. This, in substance, the Indian meteorologists do in forecasting the summer monsoon rains—one of the few even fairly successful attempts at long-range prediction.

The method of the Indian meteorologists is apparently not applicable elsewhere. No other areas have India's favorable situation—open on both sides to a flow of moist air that has traversed several thousand miles of tropical waters, and backed along its whole northern boundary by a high mountain range, the Himalaya, which deflects the rain-bearing winds along its southern slopes and causes them to precipitate their moisture there and over the plains of India.

If there were on the Mexican border of the United States a similar indraught of southerly winds, there still would be no monsoon rains; that border is separated from the equatorial waters of the Pacific by the highlands of Mexico and Central America, wherefore southwest winds would be descending, and thus warm and dry. This and other reasons preclude applying the Indian methods of forecasting to North America.

The recognized influence of the ocean upon the temperature of adjacent lands probably gave rise to the thought that the weather of a season might be forecast on the assumption that high or low temperature in some part of the oceanic areas would later be brought by ocean currents into close proximity with the lands for which it is desired to forecast.

There are weak links in this chain of reasoning: Suppose the water of the Gulf Stream, for example, to be several degrees warmer than the average as it passes through Florida Strait; what is the probability of its retaining its excess warmth until it arrives off the coast of Europe? Helland-Hansen and Fridtjof Nansen, after studying extensive data for the North Atlantic between the English Channel and New York, say that "in the middle of the North Atlantic the wind is the principal direct cause of the observed variations in the winter temperature of the surface of the ocean." They also point out that no causal relation exists between the variation of the surface-water temperature on the Norwegian coast and the variations of air temperature in Scandinavia, but rather both must have the same cause, the effect being noticeable a little earlier in the air than in the water.

Certain studies have demonstrated that pronounced changes in temperature sometimes occur almost simultaneously over both continents and oceans; if oceanic temperatures were the controlling factor, the changes should be recorded first over the oceans.

Solar Radiation Theory

Public attention has recently been directed to the work of the astrophysical observatory of the Smithsonian Institution in measuring the amount of heat received at the outer limit of the atmosphere and to the possibility of applying these measurements to weather forecasting. When the sun is most spotted, which is precisely when it is hottest, terrestrial temperatures the world over suffer a slight diminution (paradoxical as this may seem), and vice versa. How this remarkable result is brought about is not known with certainty.

The significance of the astrophysical observatory's work for weather forecasting is not yet clear. It would, therefore, be premature and unscientific to base a program of forecasting on it, before the intensive and sympathetic study which the Weather Bureau is making of the daily measurements sent to it by the observatory is further advanced.

One may, of course, finally resort to forecasting on the laws of chance. If an event can happen in but two ways, for example, the coming winter may be either warm or cold, the probability of either occurring is expressed by the fraction ½, indicating the even chance that either may occur. In an area the size of the United States, the temperature rarely varies from the normal in the same sense everywhere. One may therefore predict "a cold winter" with the assurance that in some part of the country his prediction will be verified. Rainfall is still more patchy in its distribution. In the 42 years, 1884–1925, no single month had a rainfall above the normal throughout the entire country, and but one month in the 504 showed even a close approach to that condition. A prediction of deficient rainfall which discreetly avoids specifying time and place, would, therefore, have better than an even chance of verification.

The Outlook for Seasonal Forecasting in the United States

It is manifest that every scientific effort put forth by organized weather services or other agency to increase knowledge of the physical laws of the atmosphere, must contribute to a better understanding of the problem. The writer has elsewhere pointed out the application of this subject to the United States:

> The most important variable involved is without doubt the variations in north Pacific pressure one-quarter year in advance and the influence of such variations upon the weather of the continent of North America. . . . Atlantic pressure is important but must take a subordinate place to that of the Pacific. The hope of the future so far as seasonal forecasting for the United States is concerned lies in the Pacific.

There is but one sound point of view as to the outlook for long-range forecasting: To make such forecasting widely successful will tax the ingenuity of the scientist, and certainly, meanwhile, the patience of the public. Since the beginning of recorded history, man has sown at seedtime, with the expectation of reaping at harvest, and, pending realization of his hopes for long-range forecasting, he must so continue.

ALFRED J. HENRY.

MAGNESIA in Fertilizer for Tobacco Plant

At least 10 elements are essential to normal plant growth, namely, carbon, hydrogen, oxygen, nitrogen, sulphur, phosphorus, potassium, calcium, magnesium, and iron. Some investigators believe that certain other elements need to be taken into consideration. In ordinary fertilizer practice, heretofore, only three of the above have been taken into account as follows: Phosphorus, as phosphoric acid (P_2O_5); nitrogen, as ammonia (NH_3); and potassium, as potash (K_2O). In recent years it has been shown that on some soils another element, namely, magnesium, is a neces-

sary constituent of the fertilizer for tobacco. It has been found that some tobacco soils, especially those containing considerable sand, have a very low content of magnesia, and a marked increase in the yield and quality of product usually results when this element is supplied in addition to the three commonly used.

The growing tobacco plant exhibits characterstic symptoms when magnesia is deficient in the soil and not supplied in the fertilizer, as shown in Figure 145. The first sign of magnesia deficiency is the loss of the green color at the tips of the lower leaves of the plant. This loss of green progresses inwardly on the leaf toward its base, along the margins and between the veins and from the lower leaves of the plant to the upper. The lower leaves may be pale green or almost white, except the veins which usually retain their green color. This type of chlorosis is distinguished from the mottling characteristic of potash deficiency in that the chlorotic areas of the leaf do not break down so readily.

FIG. 145.—Tobacco plant showing characteristic symptoms of magnesia deficiency

Show Discolored Areas

Plants manifesting potash-deficiency symptoms show discolored areas of the leaf of a light-yellow color which occur in splotches at the tip and between the veins of the leaf, whereas the discolored areas caused by magnesia deficiency show a light-green or almost white color and progress more regularly from the tip toward the base of the leaf along the margins and between the veins. The magnesia chlorosis also progresses more uniformly from the lower to the upper leaves of the plant. The plant showing magnesia deficiency is not, therefore, as rough as a plant showing potash deficiency, for in case of magnesia deficiency, the leaf has usually reached full size before the translocation of the magnesia takes place.

Symptoms of magnesia deficiency and its bad effects on quality and yield of tobacco can be prevented by using potash salts carrying magnesia or by applying to the soil light applications of dolomitic limestone. Cottonseed meal, muriate of potash, basic slag, and raw bone meal when used in the fertilizer mixture, also seem to partially control this trouble. Magnesium-deficiency symptoms are more prevalent in wet seasons and on sandy soils, and for this reason this condition is commonly called "sand drown."

J. E. McMurtrey.

MEASURING Changes in the Prices of Farm Commodities Changes in the prices of farm products, like changes in other prices, are obviously important to the producers of those products. Not only do the prices received during a season largely determine the farmer's income but they also influence his production for the coming season. Inasmuch as wholesale prices of farm products do not always reflect changes in prices at the farm, it becomes important to measure the changes in the latter. At the wholesale markets price quotations relate to specific grade, quality, or class, but the farmer's marketings for the most part are composed of all classes and grades. Furthermore, in the case of commodities where the market price is considerably higher than the price received by the grower, a given change in each is much more important in terms of the producer's price than of the market price. For instance, with the market price of potatoes at $4, of which the producer may receive $2, a decrease of 40 cents in both the market and farm price means only a 10 per cent drop in the former but 20 per cent in the latter.

Measures of changes in farm prices also serve to answer such questions as the following: Are some prices advancing or declining faster than others? Are certain sections of the farming industry enjoying a price advantage which others are not? Are the prices for agriculture as a whole keeping pace with prices in other industries? What do present prices suggest as to their future course? How do the prices received by farmers compare with prices they have to pay for what they buy?

Relative Prices

When we are concerned only with comparisons between prices of individual commodities, as between wheat and corn, or hogs and cattle, the simplest method of measuring their changes is to express the actual prices as percentages of their prices in some common previous period. Thus, if wheat before the war sold at the farm for an average price of 88.4 cents per bushel and now sells for 125.1 cents, the present price is 42 per cent higher, or if we take 88.4 cents as 100 per cent, the present price may be represented by a relative price of 142 per cent. If this is done for all the items to be compared, one obviates the difficulty arising from the fact that each commodity price is usually expressed in different units, such as bushels, tons, and crates. By the use of price relatives, an increase of $4 in the price of an $80-horse (5 per cent) is no greater a percentage change than an increase of 4 cents in an 80-cent bushel of corn (5 per cent). In Figures 146 and 147 the prices received by producers in the United States for grains and meat animals from 1910 to date are shown as relative prices; that is, relative to their pre-war averages taken as 100 per cent.

The comparison of the price changes of one group of farm commodities with that of another or between changes in the farmer's prices and nonagricultural prices requires the use of index numbers.

Just as relative prices indicate by what percentage the price of one commodity has changed from some previous price of a stated date, so index numbers of prices show the average percentage that a group of commodity prices has changed from the previous prices.

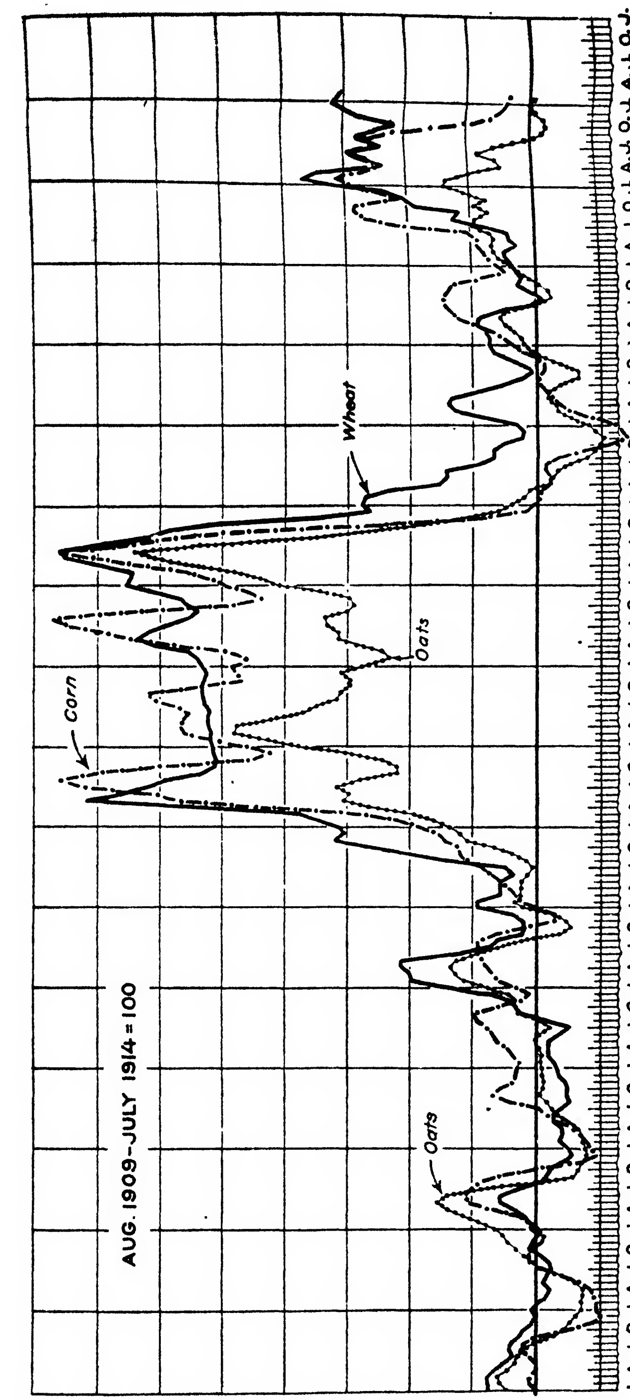

FIG. 146.—Relative farm prices of grains. When grain prices are expressed as percentages of their pre-war average prices, their relationships are more clearly brought out than is possible when dollar-and-cent prices are used

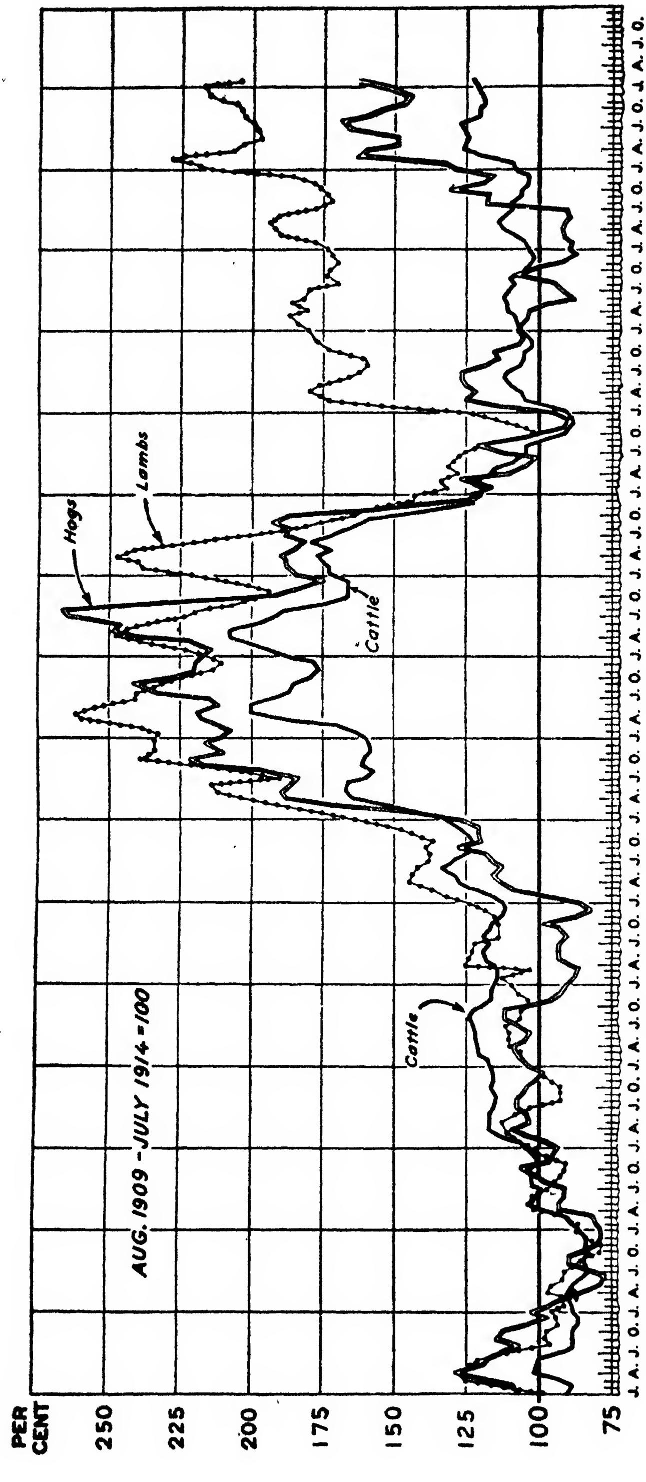

FIG. 147.—Relative farm prices of meat animals. Hog prices have improved materially since 1924. Cattle prices are still relatively low. Lamb prices have been comparatively favorable to producers since 1921

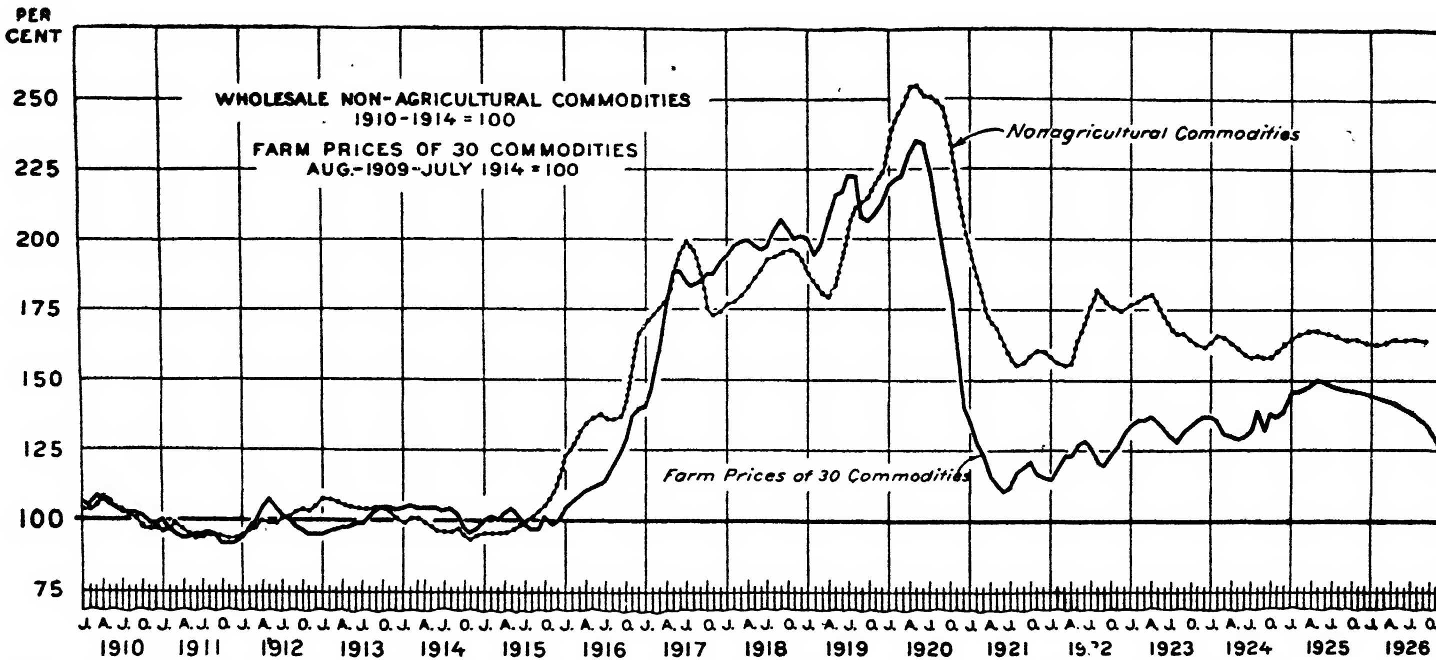

FIG. 148.—Index numbers of farm prices and wholesale prices of nonagricultural products, monthly, 1910–1925. The process of averaging the prices of a large number of commodities, some of which are high and some low, gives a result which shows much less change from date than the changes represented in Figures 146 and 147. Relative prices of farm products have been below those of nonagricultural commodities since 1919 and in 1926 lost part of the gain made in previous years

The general index numbers of the farm prices of major farm products, such as grains, meat animals, dairy and poultry products, and cotton and cottonseed are shown in Figure 148. It also shows the changes that have taken place in the prices of nonagricultural commodities at the wholesale markets.

Method of Constructing Index Numbers

Several problems need to be considered in the construction of index numbers. The first of these is the question of a base period. In the accompanying charts the base period, or the period during which the average prices are taken as 100 per cent, is the five years before the outbreak of the World War. In the construction of other index numbers, such as those published by the Bureau of Labor Statistics, the prices which prevailed in 1913 are used as 100 per cent. A one-year base for agricultural prices is not entirely satisfactory, because in any one year the prices of one or more farm products may be unusually out of line with the rest. Corn prices, for example, during part of 1913 were unusually low. If those low prices were taken as 100 per cent, it is obvious that present prices when expressed as percentages of those low prices would appear too high. On the other hand, cattle prices in 1913 were high. If they are taken as 100 per cent, present prices when expressed as price relatives would appear too low. Inasmuch as most agricultural prices fluctuate a great deal from year to year, it is safer to adopt a five-year average as the basis for comparison.

Another requirement for a base period is that it should not be too far removed from the present. This would suggest a base period after 1914, but a study of the charts suggests that any period between 1914 and 1919 would be unsatisfactory because of war-time influences on all prices and from 1919 to date because of the great depression of 1920–21, and its after-effect on farm prices.

Importance of Each Commodity

Another important question that arises in constructing index numbers is the importance that should be given to each commodity. If the index were constructed by merely taking an average of the several price relatives, it would be assuming that each commodity has the same importance, and an unusually high or low price relative for one commodity would then have a disproportionate influence on the final index. For instance, if it were desired by this simple method to construct an index number for the three prices of meat animals shown in Figure 147 for the year 1923, an average of about 175 for lambs, 110 for cattle, and 100 for hogs, would be 128. This average is above 110 because of the high figure for lambs, which is here assumed to be as important as either of the other two. But farmers as a whole derive nearly 10 times as much money income from either cattle or hogs than from lambs. If lamb prices at 175 per cent are given an importance of 1 and the other two 10 each, the average of the three becomes 108 instead of 128.

There are other objections to this method of averaging price relatives, even if they are weighted according to the relative importance

of each commodity.[14] In order to obviate these, it has been found both convenient and practical to use not price relatives, but the actual prices in the making of an index. This method involves first determining what quantity farmers sell of each product during an average month or year, and then, as prices change from year to year or month to month, to calculate the total value of these quantities for each month or year. For instance, the value of the average marketings of the major farm products at 1925 prices amounted to $7,900,000,000. The same quantities at pre-war average prices were worth $5,400,000,000, or an increase of 47 per cent. In other words, since the same quantities are used in both values, the increase is due entirely to changes in prices, and if $5,400,000,000 be taken as 100 the 1925 value of $7,900,000,000 becomes 147 or the farm price index for 1925.

This method has been used in constructing the general indexes of farm prices and nonagricultural commodity prices shown in Figure 148.

L. H. Bean.

MEAT Cooking a Fine Art That Science Assists Of meat as of pudding "the proof is in the eating." In other words the quality of meat is decided on the table by whether it is palatable as an article of food. The Bureau of Animal Industry and Agricultural Economics are studying the points which are believed to determine the quality of meat and the Bureau of Home Economics is cooperating by cooking cuts from experimental animals to prepare them for palatability tests and also by assisting in the judging of the cooked meat. The aroma of the cooked meat, its texture and tenderness, the flavor of the lean meat and of the fat, and the juiciness of the meat are the points by which palatability is judged. The cooking, it goes almost without saying, must be done by a standard method. Every roast, or steak, or whatever the cut, can then be scored up or down on its own merits. Great care must consequently be taken to preserve the characteristic flavor of the meat, to get it to just the right stage of doneness, and to avoid toughening it unnecessarily. These are of course the same points that home makers have in mind when cooking meat for the family table. But how to achieve them is sometimes another matter. The following points about the cooking of meat for these tests suggest practical methods for the home maker.

The flavor of meat comes chiefly from substances called extractives present in the juices. Holding in the juices is therefore one of the first things to strive for in cooking meat. Baking, roasting, and broiling do this best, because the surface of the meat is seared at the very start of the cooking and juices are conserved. Also other appetizing flavors develop as the high temperature of searing forms a rich brown coating on the surface. Tender cuts should always be cooked in this way. Steaming, simmering, or any other method of moist cooking draws the juices and accordingly the flavor from the meat, but for tough cuts it is necessary. The juices can, however, be saved and served in gravy with the meat.

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[14] See Irving Fisher, "Making of Index Numbers."

Salt and other seasonings also draw out the juices and mask the meat flavor. When meat is cooked to the judges' taste, no seasoning whatever is added to the meat during cooking. When broiling steaks and chops at home, salt should be sprinkled on just before they are put on the platter for serving. Large roasts are generally salted when they are first put into the oven so that the seasoning will cook through the meat. A better method would be to add the salt when the roast is about half done, and it can not draw out so much juice.

Cooking Temperature Important

The temperature of cooking also has a great deal to do with the eating quality of meat when it comes to the table. Meat is one of the most important foods from which we get protein to build and repair body tissues. In order to have highest food value, meat protein should be changed as little as possible by cooking. Protein is very sensitive to heat, and high temperatures coagulate, toughen,

FIG. 149.—Meat laboratory in the Bureau of Home Economics

and modify it. Meats, therefore, should be cooked at as low temperature as possible while at the same time keeping in the juices and getting it done to just the stage desired. After a roast or steak has been seared at high temperature, the heat should be reduced quickly and the meat allowed to finish cooking not far above the boiling point of water (212° F.). This is a slow method of cooking, but the meat is juicy, tender, and done to the same stage throughout. If a tough cut is being cooked, it should be simmered or steamed, using only enough heat to keep it cooking.

Everybody wants his meat done to what he considers a turn. This may be "rare," "medium," or "well done," for certain cuts of beef. All pork must be well done, and most people prefer all cuts of lamb and mutton, except chops, cooked at least to the medium stage. Even experienced meat cooks find it difficult to get large roasts to just the right stage every time. The shape of the cut and the amount of bone have a marked effect on the way heat penetrates.

For it is the temperature that meat reaches at the center as well as on the surface during cooking which determines its "doneness." Thermometers stuck into the center of the roast are the only way to avoid guesswork. Such thermometers may be bought for a comparatively small sum. Meat is considered rare when the thermometer registers between 130° and 150° F., medium rare between 150° and 160° F., and well done between 160° and 180° F. It should be taken from the oven as soon as the desired point is reached, because the temperature of a roast continues to go up several degrees after it is taken from the oven. If allowed to remain longer it may be overdone.

LUCY M. ALEXANDER.

MEAT Investigations That Help Stockmen Quality in meat is ultimately measured by its tenderness when cooked and by the consumer's taste. As a result, the more tender kinds and cuts of meat are more popular and command a higher price than those which need more forcible chewing. Juiciness and a full, agreeable flavor are also enjoyed by all, and these combined with a high degree of tenderness largely determine the consumer's preference for the various meats.

The profits of the stockman depend on the difference between the cost of producing his animals and their market value. He is desirous of producing the quality of meat that finds the greatest favor with the consumer, and hence also at livestock markets, if it can be done without prohibitive expense. Given a certain number of home-grown or available feeds, the farmer's problem is to combine them so as to produce the greatest possible tenderness and palatability in the meat. He must consider the kind, age, sex, breeding, and weight of the livestock to be fed; likewise the kind, quality, quantities, and prices of the grain, hay, silage, and pasture which are obtainable. Equipment, labor, time of year, and probable market are other factors which must be studied. Only then can the course be laid and decision made as to whether the product will be cow beef or baby beef, medium beef or prime beef, stockers or feeders.

A most comprehensive and forward step has been recently taken which aims to assist both producer and consumer in answering the questions "What kind of beef shall I raise?" and "What kind of beef shall I eat?" About 30 State agricultural experiment stations and the United States Department of Agriculture have begun a cooperative study of the factors which influence the palatability of meat. The National Livestock and Meat Board is sponsoring the work. What is quality? How can it be distinguished? What is the best way to produce it, and the best way to preserve or improve it?

Feed-Lot Practices Standardized

The cooperating institutions mentioned have mapped out a program which will help in answering these questions. Feed-lot practices have been standardized so as to make a true comparison between sex, age, breeding, grain, grass, and other factors. An official committee scores each steer as a feeder, a finished animal, and a carcass. Complete slaughter records are combined with the feeding records.

FIG. 150.—Grading committee at work in the Government abattoir

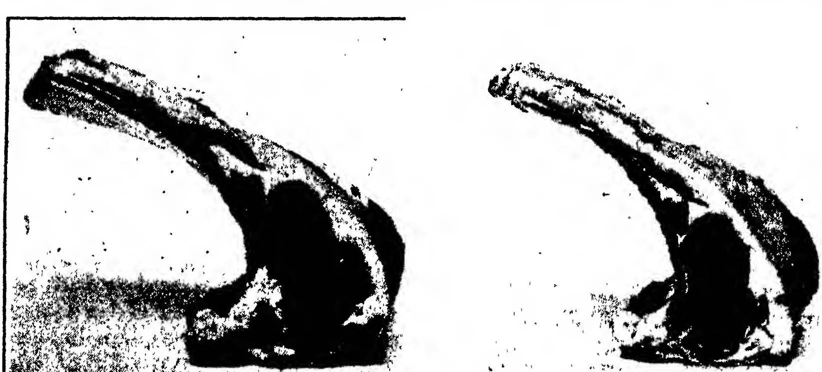

FIG. 151.—Although these beef ribs appear to an inexperienced purchaser to be very similar, the rib at the right was surprisingly superior in tenderness and flavor. The object of these meat investigations is to determine the breeding, feeding, and management practices which cause such variations

Lastly, the meat from these animals is actually measured as to quality. The color, tenderness, chemical composition, and muscle structure are recorded and compared. Samples are also cooked by standard, uniform methods and graded by another official committee.

One thousand cattle were fed in accordance with this program last year. Ribs from 63 head were sent to the Government laboratories for a complete test as to quality. Eleven hundred hogs were slaughtered at the Government abattoir during the last year, most of them being used in the study of factors causing soft pork. Many were experimentally cured to determine the effect of the curing methods on the palatability of the meat.

More than 400 lambs were also slaughtered at the department's experiment farm at Beltsville, Md., for a comparison of various feed-lot and management practices.

The work is new, but sufficient progress has already been made to warrant the belief that the factors which influence quality in meat can be more definitely measured and controlled. This will be to the advantage of both the person who raises the livestock and the one who eats the meat.

K. F. WARNER.

MEAT Retailing Methods A study of the retail meat industry has been made in 20 representative cities and towns in all sections of the country. The cities and towns were selected according to geographic distribution, comparability of general business, density of population, and other comparable characteristics. The purpose of the survey was to determine efficient and inefficient methods of retailing and ascertain the effect different methods had on livestock production.

Conditions in the retail branch of the industry have undergone marked changes during the past two decades. Changes in living conditions have been responsible for greater economies in distribution, while increased competition of a progressive type has largely displaced the old-time butcher. Accordingly, the requirements for success in the operation of a retail meat market to-day are different. Opportunities for initiative and sales ability have been multiplied, and in general the standard has been raised.

The factors studied included type of store, location, character of business, practical knowledge of proprietor, source of supply, methods of buying, selling practices, facilities and equipment, advertising, sanitation, bookkeeping, types of employees, attitude toward customers, salesmanship, misleading practices and deception, frequency of turnover, price determinations, disproportionate demand for cuts of meats, spread between wholesale costs and retail prices, volume of business, wastes and shrinkages, number of stores in relation to population, and numerous factors of lesser importance which exert an influence on the industry.

Chief Factors in Industry

The major factors which concern the industry most were found to be insufficient knowledge on the part of many operators, adherence to old methods, inadequate equipment, false and misleading adver-

tising, low degree of sanitation in a large percentage of markets, and a total lack of uniform standards of quality in the sale of meats. Of these, probably the effect produced by misrepresentation is the most important. Consumers, for the most part, have little or no knowledge of differences in quality of meats, consequently are not in position to make selections intelligently. Because of this, some dealers did not hesitate to misrepresent their products to their own financial advantage. This was done principally through misleading displays and advertising. For these purposes meats of high quality were stressed and meats of low quality actually sold.

Procedures of this kind have affected producers of better grades of meat animals because meats of poor quality have, in many cases, been sold as meats of high quality with a consequent loss of confidence on the part of consumers. Misrepresentation in the sale of meats has demonstrated clearly the need for uniform grades. The industry in general will not be placed on a fundamentally satisfactory basis until uniform standards have been universally adopted.

The study showed that too many incompetent men were engaged in operating retail markets. Some of these lacked a knowledge of the fundamental principles on which any business is based. Many had little or no knowledge of the retail meat business prior to their entrance into it. They knew practically nothing concerning percentages and yields of cuts, therefore had no means of knowing how to determine selling prices. Many such operators followed price lists of one or more competitors, regardless of quality of meats handled. Consequently they were operating on a "hit or miss" basis, with the result that their period of operations was likely to be short lived and generally unsatisfactory to all concerned.

Many Without Records

Approximately 50 per cent of the stores studied were found to be operating without adequate bookkeeping records and many of these had no records by which even their operating expenses could be determined. Many admitted their inability to meet competition, yet they failed to appreciate the need for keeping records.

Many dealers were found who were trying to operate with insufficient equipment and inadequate refrigeration. In most such cases waste and shrinkage were factors which could not be controlled satisfactorily.

Despite the fact that conditions in the retail meat industry have changed materially in recent years, necessitating new methods of operating, many operators still cling to antiquated methods and as a consequence they are unable to meet competition of modern progressive dealers satisfactorily.

W. C. Davis.

MEAT Spoilage; Its Prevention The spoilage of meats in curing, while fortunately the exception and not the rule, is nevertheless a source of serious loss both to commercial establishments and to farmers. The magnitude of commercial meat curing is shown by the fact that about 3,000,000,000 pounds, chiefly pork, were placed in cure in establishments operating under Federal inspection during the last fiscal year.

Scientific study of the spoilage of pork in cure began soon after the inauguration of the Federal meat inspection service under the present law in 1906 and has been continued up to the present time. Twenty years of study and observation have developed some of the causes of spoilage as well as preventive measures.

Souring of Hams

Spoilage is due to bacteria, and in the preservation of meat the development of bacteria is controlled by the use of low temperatures. Bacteria of one particular type are regularly found in sour hams. This type is characterized by the properties of growing in the absence of air and of forming spores or seeds. All spore-forming bacteria are extremely tenacious of life when in the spore stage and some of them will grow at uncommonly low temperatures. Bacteria of this type are common in nature and are abundant in the dirt and dust of livestock pens and on the skin and hair of the animals themselves.

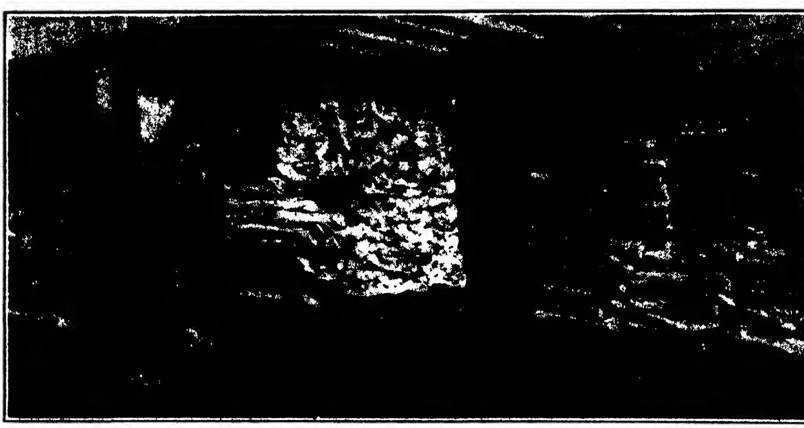

FIG. 152.—Curing meat in dry salt. The quality of the product and success in preventing spoilage depend first on prompt and efficient chilling, and next on salting to prevent growth of the organisms that cause spoilage

Their presence has been demonstrated repeatedly in hog-scalding equipment.

Bacteriological study of hams has shown the presence of bacteria of the type responsible for spoilage in such locations as to make it certain that they did not gain access to the carcass during the scalding or dressing processes. The state of present knowledge indicates that the bacteria are present in the blood and tissues of the living animal. They are invariably present in the meat, and no means are now known whereby they can be entirely excluded. It does not follow from this fact that cleanliness and sanitation may be neglected. On the contrary it is of the utmost importance that any further invasion of destructive organisms be avoided. Preventing the development of the bacteria already in the meat is sufficiently difficult without increasing their numbers unnecessarily.

Methods of Prevention

Experience has shown that the first step in prevention of spoilage is the chilling of the meat. It is necessary to reduce the temperature

of the meat below 40° F. as soon as possible. Freedom from spoilage is dependent on quick and efficient chilling.

The next and final check is the common salt used in curing. Salt will not kill the organisms concerned, but when all parts of the meat have taken up as little as 3 per cent of salt it is effective in preventing growth of these organisms.

The prevention of spoilage of meats in cure begins with the live animal. Holding the live animals overnight in clean pens, with plenty of water but no feed, ought to diminish the number of de-

FIG. 153.—Federal inspector testing smoked hams for soundness. A steel trier is used for making the tests

structive organisms in the flesh. The meat of an animal which has been driven, overheated, excited, roughly handled, or heavily fed shortly before slaughter may be expected to contain more than the normal number of such bacteria. Rapid and efficient handling through the different processes of slaughtering, scalding, dehairing, and evisceration, prompt and effective chilling, and holding the chilled meat at a low temperature until it has taken up salt enough for preservation comprise the means of prevention against spoilage.

Applied to commercial establishments, this means strict adherence to what is generally recognized as sound practice. There is no convenient short cut, but strict attention to every detail is required. The same principle applies to home slaughtering. In the absence of artificial refrigeration it is advisable to wait for clear, cool weather for slaughtering. The hogs should be confined in small pens the day before killing and should be watered, but not fed either the evening before or the day they are killed. Each hog should be scalded, scraped, and eviscerated promptly after killing. The carcass should be thoroughly cleansed with plenty of clean water, and hung where it will cool throughout without freezing. The meat should then be cut and placed in cure as soon as practicable. This procedure is recognized as good practice and is shown to be so by scientific study.

R. P STEDDOM.

MEAT Standards and the Livestock Producer One of the outstanding developments in the livestock industry in recent years is the marked increase of interest on the part of livestock producers in the dressed-meat market. Only a few years ago the interest of even the more progressive livestock producers ended at the stockyards when his livestock was turned over to the packer-buyer. In those days the stockman was vitally concerned with production costs, facilities and costs of transportation, and the price his stock brought when it reached market. But there his interest stopped. If the check or draft which he received from his commission man exceeded his production costs by a fairly wide margin he was jubilant; if by a narrow margin he was happy; and if it failed to equal his costs, as frequently happened, he was downcast and sometimes pessimistic.

Likely to Blame Buyers

Under such circumstances he was likely to charge his losses up to the alleged greed and heartlessness of the buyers on the livestock market. Almost never did he attempt to look through, over, or beyond the purchaser of his livestock. The buyer was the man who took his stock and either did or did not give in exchange what the producer considered a fair price, and that, for the producer, was the end of the matter. Unfortunately there are still some livestock producers who conduct their business in this manner, but the number is growing rapidly smaller.

The up-to-date stockman recognizes the buyer for what he is—a middleman. Although the buyer can by no means shirk all responsibility for the price paid the producer, nevertheless the latter now looks far beyond him to the ultimate consumer of the meat which his livestock produces. He realizes that he is converting grass, hay, and concentrates into meat rather than livestock. He recognizes the fact that he is really producing for the meat consumer and not for the livestock buyer.

Consumer Must Be Considered

Above all he has come to appreciate the fact that it is the meat consumer who holds the purse and supplies the money—not only that

which is divided among the various distributing agencies but also that which ultimately reaches the livestock producer himself. That being the case it becomes obvious that unless the meat produced by the stockman is of a kind, class, weight, and grade which appeals strongly to the consumer, the latter will either refuse to exchange his money for the meat or will take advantage of his position by demanding a relatively larger quantity for a relatively small amount of money. In a word, the producer has come to realize that if he is to obtain a relatively high price for his stock it must ultimately be because that livestock will produce meat for which the consumer is willing to pay a relatively high price. Most livestock producers now appreciate the fact that unless they succeed in producing something that the meat consumer wants and wants badly, they can not hope to find a ready or profitable sale for their stock.

It follows then, as a natural course, that the livestock producer of to-day is studying very carefully the wants and requirements, the likes and dislikes, the peculiarities and preferences of meat consumers and is doing his utmost to meet those requirements. He is doing this, not as a matter of altruism, but purely from the standpoint of an enlightened selfishness.

A Common Trade Language

In view of the fact that consumer wants are matters of such vital concern to the livestock producer, it would seem essential that some satisfactory means of communication between the two be devised. This is particularly true in view of the fact that frequently anywhere from 1,000 to 3,000 miles separate producer and consumer. Under such circumstances a common trade language capable of being used and understood alike by meat consumers, handlers, and producers would seem to be one of the first essentials. At this point the scheme of standard market grades for both livestock and meat, devised by the United States Department of Agriculture, comes to the assistance of both the producer and consumer. Before the meat consumer can inform the livestock producer as to the kind of meat he wants he must have at his disposal a set of class and grade names which will identify unmistakably to the producer just the kind of meat the consumer wants.

The real purpose of all standardization is identification. The department's plan of setting up fixed standards for grades of both livestock and meats makes this possible. This system of standardization provides ways and means whereby the meat consumer can convey his needs and preferences to the livestock producer, through specifications and obviates the necessity of personal inspection of the commodities involved.

So long as a system of barter served the needs of the industry there was little use for a standard trade language. So soon, however, as buyers and sellers become widely separated one of two courses becomes imperative; either goods had to be shipped to the consumer subject to his inspection and approval, or facilities had to be provided whereby he could describe the thing desired in such a way that there was no likelihood of misunderstanding on the part of the seller. Economy dictated the latter course.

Why should the livestock producer be interested in grade standards for meat and how is he likely to profit from such standards? He should be interested because such a system puts him in almost immediate contact with his real market—the meat consuming public. Because it enables him, the producer, to inform the buyer or consumer regarding the thing he has to offer and makes it possible for the consumer to tell the producer exactly what he wants.

Use of Grades to Producer

The livestock producer will profit from such standards because, under such a system, if the consumer wants choice steer beef the producer will not send him an animal which will produce medium grade cow beef. Because by knowing in advance what the consumer wants the producer can govern his operations accordingly and avoid much waste in time and effort which frequently occurs from trying to force on the consuming market commodities for which there is little or no demand. Finally the producer will profit by being able intelligently to read and interpret market reports, learning from such reports not only what the consumer market demands, but just what prices it will pay for the various classes and grades of livestock and meat.

C. E. GIBBONS.

MECHANICAL Corn Picker in the Corn Raising States

In eastern South Dakota and southwestern North Dakota there are more mechanical corn pickers on farms than in any section of similar size located within the States which are commonly referred to as making up the Corn Belt. This situation exists because the picker meets a big demand from farmers for a method of harvesting which will eliminate husking by hand the low-growing varieties of corn which many of them grow. The corn picker does not necessarily eliminate all possible difficulties that may be experienced when the crop is harvested by hand power.

During corn harvesting in the Dakotas, variation in soil and weather conditions affect operation. When the ground is slippery the machine does not work well on account of poor traction, as the drive wheel often becomes clogged with mud and trash. The machine does its best on a firm, dry, or damp soil. In corn that stands up well the picker does a very good job, and in corn that is not too badly lodged it does fairly good work. If corn is lodged crosswise a better job can be done than when it is lodged lengthwise of the row. The picker wastes less corn and does the cleanest job of husking in corn that is slightly damp and the stalks are tough. Under these conditions few ears are left in the field, practically all the husks are removed from the ears, and the stalks do not break loose from the ground when passing through the machine. To some extent the quality of work is dependent upon the operator and his knowledge of the machine and the proper adjustments to make under different conditions.

Work Done Per Day

The work done per day by a picker depends upon the power used, equipment, soil, weather, topography, yield, and hours of work.

Table 18 shows the rate of work per day for crews of the same size using different methods of unloading and for different sized crews. According to men who use a tractor to pull the picker, a larger acreage can be covered in a day than when horses are used.

TABLE 18.—*Rate of work per day for mechanical corn picker with different sized crews*

Picker crew		Hauling crew		Method of unloading	Yield per acre	Acres per day	Bushels per day	Hours per day	Bushels per hour	Bushels per man
Horses	Men	Horses	Men							
					Bushels					
5	1	2	1	Hand	26	6¼	163	8½	20	82
5	1	2	1	Elevator	32	6½	203	8	25	102
6	1	2	1	Hand	25	6¾	164	8½	19	82
5	1	4	2	do	29	7½	220	9	25	73
5	1	4	2	Elevator	34	7	241	8¾	29	80
6	1	4	2	Hand	30	7	206	8¾	23	69
6	1	4	2	Elevator	29	8	236	9	27	79

From interviewed farmers who own pickers, it is learned that acreage in corn is not the factor which most of them consider first or which influences them in purchasing a machine, but rather the advantages to be gained by its use. The average area in corn on farms where pickers were owned was 105 acres, but only an average of 89 acres was harvested with the machine. Although the present price of a picker, $400 to $425, may seem high, the advantages of ownership may more than offset the first cost.

Supplants Labor on Farm

Many owners feel that the principal advantage of a picker is that it enables them to do away with high-priced, inefficient, and undependable hired help for husking the corn crop by hand. Others feel that the elimination of hand husking, which they and their families are required to do, is more important. Practically every owner feels that either is of enough importance to warrant the expenditure necessary for the purchase of a picker.

With a comparatively small acreage of corn to husk, the ownership of a machine by an individual farmer may not be warranted because of the cost, even though it enables him to do his husking quicker and with less expense and labor. The joint ownership of a picker is often practical and where satisfactory arrangements can be made, such ownership is recommended by men who own their machines jointly.

L. A. REYNOLDSON.

MILK Flavors and Odors Ascribed to Four Main Causes

Cow's milk invariably has a characteristic flavor and odor more or less pronounced, but comparatively little is known concerning the factors contributing to these characteristics. The flavors vary from those which make the milk pleasing to others which make it objectionable and unpalatable.

Flavors and odors in milk result mainly from four causes: (1) The internal or physical condition of the individual cow, (2) highly flavored feeds, (3) odors absorbed by the milk after production, (4) biological changes in the milk.

Flavors and odors of the first and second classes are noticeable just after the milk is drawn and usually do not increase with time. Those of the third class may develop when the atmosphere to which the milk is exposed is permeated with pronounced odors, while those of the fourth class become more apparent after some time has elapsed.

Milk of pleasing quality can be produced only when the factors deleteriously affecting the flavor and odor of milk are controlled. In 1921 the department began investigations, considering principally the factors of the second and third classes. Throughout the investigations the department has endeavored to suggest methods of assistance to dairymen in the production of milk reasonably free from feed taints frequently found in market milk.

Objects of the Investigation

The objects of the investigation are as follows: (1) To determine whether or not certain feeds affect the flavor and odor of milk, (2) if they are found to do so, to determine how these feeds may be used and the milk handled so as to minimize their effect on the quality of the product.

For this work cows are selected giving milk relatively free from abnormal flavors and odors when fed a basic hay and grain ration. These are known as check cows. In addition to the basic hay and grain rations, the other cows receive varying quantities of the experimental feed at different stated times before and immediately after milking. The cows in the various groups are interchanged at frequent intervals in order to equalize any abnormal results due to the milk of any individual animal. Samples are taken from the milk produced by these cows and judged for flavor and odor. The opinions of the judges determine the degree to which the feed affects the flavor and odor of the milk.

From the work thus far completed it has been shown that when corn silage, legume silage, green alfalfa, cabbage, and turnips are fed to dairy cows one hour before milking, the flavor and odor of the milk are seriously affected. Green rye, green cowpeas, potatoes, dried beet pulp, and carrots affect the milk only to a slight degree; whereas green corn, green oats and peas, pumpkins, and sugar beets have practically no effect on the flavor and odor of the milk produced.

Throughout the work certain facts have been proved, namely:

While feed-tainted barn air may have some effect on the flavor and odor of milk, it is of relatively small importance even under extreme conditions; for feed flavors and odors are imparted to milk mainly through the body of the cow and not by absorption from the surrounding atmosphere.

Highly flavored feeds may be fed immediately after milking without seriously affecting the flavor and odor of the milk produced at the next milking.

Most feed flavors and odors are more pronounced in cream than in the milk from which the cream is skimmed.

Proper aeration reduces strong feed flavors and odors in milk, and slight feed flavors and odors may be eliminated.

Time Element Involved

In order to obtain further and more definite information concerning the time required for feed flavors and odors to enter the milk and the time required after consumption before the flavor and odor will have disappeared, as well as the methods by which the flavor and odor may enter the milk, experimental work was carried on with garlic, and the following conclusions were reached:

Garlic flavors and odors may be detected in the milk when the samples are taken one minute after feeding one-half pound.

The intensity of the garlic flavor and odor increased as the time interval between feeding the garlic and taking the milk samples increased, until at 10 minutes a high degree of intensity was reached. This intensity remained to an objectionable degree for 4 hours, after which there was a decrease, and at 7 hours it had practically disappeared.

Strong garlic flavor and odor were found in milk drawn 2 minutes after the cows inhaled garlic odor for 10 minutes. The inhalation took place in such a manner that it was impossible for the cows to eat any of the garlic. The cows were then milked in an atmosphere free from garlic odor. The garlic flavor and odor imparted to the milk in this manner practically disappeared in 90 minutes.

Garlic odor was readily perceived in samples of blood drawn 30 minutes after feeding the cows 2 pounds of garlic tops, and strong garlic odor was present in the blood drawn 45 minutes after such feeding.

These data indicate that the feed flavor and odor are absorbed by the blood from the stomach, or, in cases where the feed has a pronounced odor, to some extent from the lungs and thence transmitted to the milk.

Time of Feeding Important

Milk is often rendered unsalable by feed flavors, while a product of pleasing taste extends the market by increasing the quantity consumed. Feed flavors may be avoided by controlling the time of feeding, for in most cases feed flavors are not imparted to milk except for a few hours after feeding. For this reason dairy cows should be fed highly flavored feeds immediately after and not just before milking.

Pastures should be cleared of weeds which cause objectionable flavors and odors in milk. Until this is done, cows should be removed from infested pastures as long as possible before milking. The longer the interval between removing the cows and milking, the less the intensity of the undesirable flavors. Some weeds, however, have a tendency to impart objectionable flavors several hours after consumption. When such weeds are present it may be necessary to forego pasturing until the weeds are exterminated.

C. J. Babcock.

MILK Production Indexes Milk production in the United States during the first nine months of 1926 exceeded production during the first nine months of 1925, as measured by production per cow on the first day of each month from January to October. The department has attempted to obtain some data which will answer the many requests it receives for information on relative milk production. Since September 1, 1924, the crop reporters have been asked on the regular crop-report blanks to answer the following questions: Number of cows milked on your farm yesterday. Number of all milk cows in your herd yesterday (both dry and in milk). Total production of milk by your herd yesterday (pounds or gallons).

The chart, Figure 154, represents the number of pounds of milk per day per cow in herd as reported by crop reporters. It would appear that production during September, October, and November

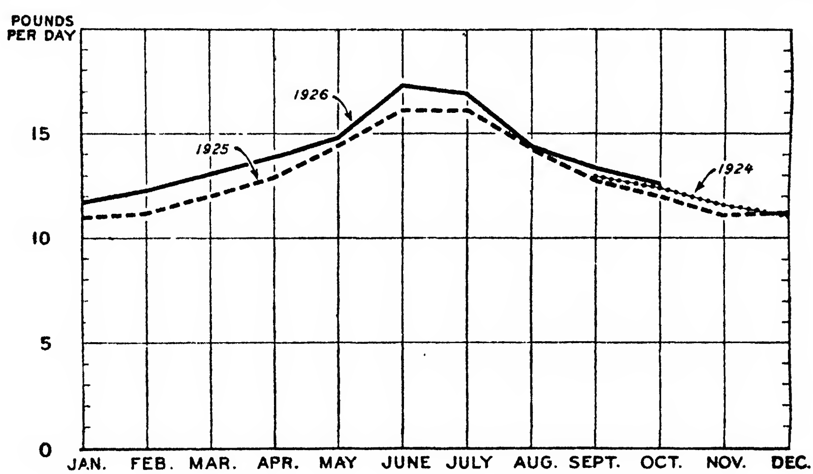

FIG. 154.—Milk production per cow in herd on 1st day of each month, September 1, 1924, to October 1, 1926

in 1925 was less than in the same months in 1924 for both the North Central States and for the United States as a whole. Production in 1926 to date (October 1) was somewhat in excess of 1925 for the United States as a whole. In the North Central States, however, production was slightly less during July and August. The increased production in 1926 is attributed largely to larger supplies of home-grown feed (except hay) and the relatively lower prices of feed grains, and to a lesser degree to a greater proportion of mature cows in 1926 and in 1925. The department's estimates of heifers kept for milk on January 1, 1926, indicated fewer than a year earlier. The proportion of heifers included in the " cows in herd " numbers would therefore be smaller than in 1925.

Average Production in 1925

A preliminary calculation of average production per cow per year from the 12 "sample" days reported indicates an average production for 1925 of 4,730 pounds. This differs somewhat from production as computed from data on manufactured dairy products, estimates of

farm consumption, etc. Further study is needed of the raw data to establish a basis of estimating total production from these figures.

It was anticipated that the returns from this inquiry would give an indicated production in excess of average production for all farms. It has been the experience of the department that crop reporters are somewhat more efficient than the average farmer. They operate larger farms, have a greater percentage of their farm area in crops, have larger holdings of livestock, etc., than the average farmer as measured by census figures. It is felt, therefore, that the results of this inquiry are more useful as indicating relative production as between months or years than as a measure of absolute production.

The seasonal change in milk production, as shown by these reports, is generally in agreement with accepted ideas. Here, again, however, crop reporters may not be strictly representative of all farmers. A comparison with a larger sample, of more strictly average farmers in Wisconsin, indicated that the crop reporters produced a larger percentage of the year's production in the winter months and a smaller percentage in the summer months. The curves shown may therefore show less seasonal change than milk production as a whole.

The data upon which the chart is based refer only to production per cow in herd. No allowance is made for changes in the number of cows in herd, either seasonal or annual. These changes, however, appear to be slight in comparison with changes in production per cow. Thus, for the United States the number of cows and heifers, 2 years old and over, on January 1, 1926, was only 1 per cent less than on January 1, 1925, while production per cow was 6 per cent greater. A study of the number of cows per farm reporting indicates only a slight seasonal change in number per farm. For the North Central States, in 1925 the number of cows in herd for May 1 and June was 3 per cent above the number for January and February, and the number for September and October was 1 per cent above.

Effect of Pasture Conditions Shown

In the North Central States pastures in 1926 were later and less plentiful in the spring than in 1925. Milk production reflected this on May 1. Again, pasture conditions in July and August were lower than in 1925, but better in September. This apparently influenced milk production in these months. In the early summer of 1925 grain prices were high and grain scarce, whereas during the same period of 1926 prices were low and supplies plentiful. Doubtless more grain was fed during July and August, 1926, than in 1925, which helped to hold up milk flow; otherwise it would have shown more decrease than now indicated.

JOSEPH A. BECKER.

MORGAN Horse Record The story of the Morgan horse is one of the most unusual in the annals of the country's livestock industry. The breed is founded chiefly on one famous stallion; it flourished for many years; then almost became lost, and finally was reestablished. Morgan horses are of unusual interest because of their hardiness, soundness, and remarkable utility qualities.

The stallion Justin Morgan, foaled in Vermont in 1793, was the progenitor of the Morgan breed of horses. His prepotency was so great as to cause his descendants to be easily recognized. Justin Morgan was a small horse, under 15 hands, but powerful and of quick action. He is said to have excelled any horse with which he competed in walking, running, and pulling. Though this famous stallion was a remarkable individual, little is definitely known of his ancestry. After his death, in 1821, the influence of Justin Morgan on the light-horse industry of America continued with pronounced effect.

The breed flourished. In the New England States, Morgans were used almost to the exclusion of other horses until a craze for trotting speed struck the country. The new interest brought about a mixing

FIG. 155.—One of the few statues erected to the memory of a horse, Justin Morgan, progenitor of the breed bearing his name. This statue is at the United States Morgan Horse Farm, through presentation by the Morgan Horse Club of America

of the best Morgan stock with trotting blood. Some writers have asserted that the Morgan added stamina to certain trotting-horse families. But the mixed breeding resulted in some cases in the loss of the Morgan's beautiful form and other of its qualities. For many years this diluting and scattering of Morgan blood continued, and little serious thought or foresight for preserving the breed developed until about 20 years ago.

In an effort to preserve the best specimens of the Morgan horse, several public-spirited men who knew personally its many meritorious qualities, took collective action which soon bore fruit. One of the first steps was taken by Joseph Battell, of Middlebury, Vt., who established the American Morgan Register as an authentic record of Morgan blood lines. He also gave the United States Department of Agriculture a 400-acre farm near Middlebury. In cooperation with the Vermont Agricultural Experiment Station the department as-

sembled a small band of Morgan mares as the beginning of a permanent project to conserve and perpetuate the breed.

Superior Specimens Produced

The farm, known as the United States Morgan Horse Farm, now consists of 1,000 acres and maintains a stud of about 60 animals. One of the first steps after its establishment was that of tracing the descendants of the best Morgans sold to purchasers in other sections of the country. Stock was obtained in Kentucky, Kansas, Texas, New York, Washington, Idaho, Rhode Island, New Hampshire, and Illinois, as well as in the breed's native State of Vermont. The whole effort was to get into the Government stud the best Morgan

FIG. 156.—Morgan mares used for heavy, farm hauling, and other farm work at the United States Morgan Horse Farm

blood to be obtained anywhere in the country. Privately owned Morgan stallions also have been used liberally as a means of restablishing desired blood lines.

Prizes won at numerous fairs and expositions wherever horses from the United States Morgan Horse Farm have competed are evidence of superior specimens of the breed resulting from its reestablishment. The prizes have included two champion stallions, one reserve champion stallion, and numerous first premiums in breeding classes for both sexes. Animals shown in driving and riding classes also have won many premiums.

Morgan horses produced at the farm likewise have made creditable showings in several official endurance rides sponsored by breed associations and individuals active in horse improvement.

Morgans are now found in most of the important farming sections of the United States. They have earned a reputation for hardiness, soundness, and usefulness. As saddle horses, Morgans are noteworthy for their great intelligence and hardiness. The First Ver-

mont Cavalry in the Civil War was mounted on Morgan horses and made a great reputation. The horses also called forth general admiration. In Sheridan's famous ride to Winchester, made immortal in verse, his mount was a Morgan horse. After its death the animal was stuffed and is now to be seen at the National Museum in Washington.

Make Good Cow Horses

As a breed the Morgan has a smart, alert walk, an easy trot, and a smooth, collected canter. Among cattlemen of the West and South, Morgans have acquired a reputation as desirable cow horses. They learn quickly and have the strength and courage necessary for work among cattle on the Great Plains. Morgan stallions bred to the proper type of range mares are said to produce ideal cow horses.

FIG. 157.—Mansfield, 7255, A. M. R. A very promising young Morgan stallion now in stud at the United States Morgan Horse Farm

Department records show that Morgan horses have been sent to Japan, the Island of Guam, Porto Rico, and Central America. Reports indicate that the Morgan breed is well adapted to conditions in those countries. In the short span of 20 years the Morgan breed, which almost became extinct through diffusion of its blood, has been reestablished.

The adaptability and value of this horse is now more fully appreciated and recognized than in the past. It is no longer a breed associated with New England horse-breeding activities but is known nationally and abroad. Morgan stallions are especially valuable for improving native stock in various parts of the country owing to their remarkable prepotency and ability that adapt themselves to new environment.

JOHN O. WILLIAMS.

MOTHS—Preventing Their Depredations Over 50 years ago the gipsy moth one of the insects most destructive to tree growth in many European countries, became established in the suburbs of Boston, Mass., and in 1897 serious defoliation by the brown-tail moth, another European pest, was discovered in Somerville, Mass. The gipsy moth increased slowly, and about 30 years later it caused havoc to forest, fruit, and shade trees in the region where it was introduced. In many cases practically all foliage was devoured by the caterpillars and the insects swarmed over walks and houses in the residential sections and became an unendurable nuisance. The State of Massachusetts then attempted to exterminate the insect and carried on this campaign for about 10 years, reducing the pest to such small numbers that public interest in the project waned and the work was discontinued.

Less than five years later the insect multiplied to such an extent and caused such enormous damage that the State resumed operations, but in the meantime the insect had spread into Maine, New Hampshire, and Rhode Island. Federal aid was obtained in 1906, with the idea of preventing the spread of the insect to other parts of the United States. The infestation was so severe that thousands of acres of woodland, in addition to fruit and ornamental trees in all of these States, were being defoliated annually. Every effort was made to reduce the infestation and prevent further spread, but owing to the extent of the territory and the density of infestation, the insect continued to spread toward the north and west. The brown-tail moth infestation also increased in severity and for a number of years spread more rapidly than the gipsy moth. During the war and the years immediately following, control work was seriously handicapped on account of rapid turnover in personnel.

In 1920 a large colony of gipsy moths was found in Somerville, N. J., which was believed to cover an area of about a hundred square miles. With the cooperation of the New Jersey Department of Agriculture, the Bureau of Entomology attempted to exterminate the insect in this area, and although careful field work demonstrated that it was present in a territory of over 400 square miles, the work was continued and the project vigorously pushed. In view of the fact that the insect had been completely exterminated in a number of vigorous isolated colonies, including one at Cleveland, Ohio, Geneva,, N. Y., Rutherford, N. J., and Mt. Kisco, N. Y., it seemed feasible to attempt its extermination in this larger New Jersey area. Since that time the infested area has been reduced nearly one-half and the insect controlled so completely that no damage has resulted. This project is being continued and a successful conclusion is anticipated.

Pest Enemies Liberated

As early as 1906 investigations were begun in Europe by the Bureau of Entomology in cooperation with the State of Massachusetts, to introduce and establish the natural enemies of these two pests. This proved to be a slow and tedious undertaking owing to the difficulty of obtaining correct information concerning the parasites and natural enemies in their native home, and the extreme difficulty of shipping them to this country in the live state. Many difficulties were also encountered in successfully handling the para-

sites after they were received and liberating colonies in the infested areas. Since this work was begun the gipsy moth laboratory at Melrose Highlands, Mass., has liberated over 85,000,000 of these beneficial insects. Some were received from Europe, others from Japan, but by far the greater number developed by increasing some species under laboratory conditions and by recolonizing from field collections of some of the species that had become established. Of more than 50 species brought to this country in connection with this work, only about 15 have been able to maintain themselves under New England conditions. The object of the parasite work was to accomplish by natural means the reduction of the gipsy moth infestation to the lowest possible point.

Other experimental work has been conducted by the laboratory for the purpose of developing more efficient methods of field control, many of which have been put in operation.

A system of inspection has been worked out which operates in the area that is quarantined by the Federal Horticultural Board. This safeguards the shipment of all products sent from the gipsy-moth infested area to other parts of the country and has been successful in preventing long-distance spread of the insect.

Each of the infested States in New England has been carrying on field-control work within its borders and has been striving to reduce the infestation as rapidly as possible. The Federal field work has been confined to the outside infested area, but owing to the density of infestation it was necessary periodically to shift the operation westward. By 1923 small colonies were found in western Massachusetts and southwestern Vermont, and two colonies were located in New York, east of the Hudson River. At that time the plan of work was radically changed, and in cooperation with the State of New York, an area was laid out from the Canadian line to Long Island Sound, some 30 miles in width, approximately one-half the territory being in New York east of the Hudson River, with the idea of doing intensive work in this belt and keeping it free from infestation. (Fig. 158.)

Number of Colonies Reduced

The work has been carried on in this zone, and although more colonies were found during the first year or two than was anticipated, it has been possible to reduce the number of colonies. This plan is working effectively and gives promise of preventing spread of the gipsy moth to the west. The Adirondack and Catskill Mountains lie directly west of this zone area, and every effort is being made to prevent the insect from becoming established in these regions. As a precautionary measure a large number of towns have been examined west of the zone. The only dangerous infestations have been found recently and these are being given proper attention. With the exception of a strip of towns extending south from the Canadian border, the conservation commission of the State of New York is handling the field work in that State and treating a few isolated colonies on Long Island. The entomological branch of the Dominion of Canada is carrying on scouting work along the Vermont and New York State lines and has cleaned up the only colony found in Canada.

The results of the work in the barrier zone have been very satisfactory and have made possible the elimination from quarantine of a large number of towns in all the States concerned on account of the satisfactory condition of the territory.

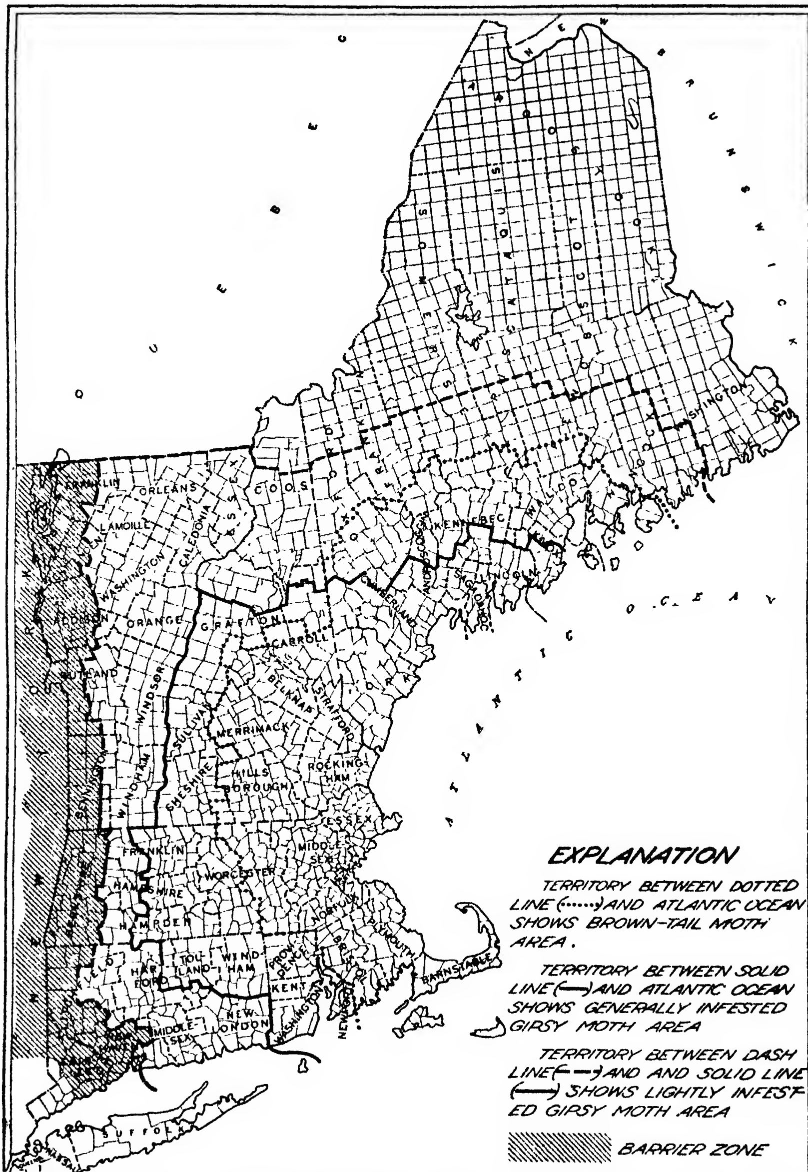

FIG. 158.—Map of New England showing gipsy moth barrier zone

During the last five years the density of the gipsy moth infestation in nearly all the towns east of the barrier zone has gradually decreased. This has resulted in part from the field work that has been

carried on by the States, towns, and individuals, but the greatest improvement is due to the gradual increase and effectiveness of introduced parasites and natural enemies.

In 1924 the total acreage defoliated by the gipsy moth was less than at any time since the work on this insect was begun by the Bureau of Entomology, and natural enemies were most abundant. Since that time the gipsy moth has increased slightly in most of the area east of the barrier zone, and in the Cape Cod region in Massachusetts enormous areas have been completely defoliated. (Fig. 159.) This has been due to a sharp decline in the number of the parasites, and it is impossible to foresee just what will happen in this respect during the next few years.

Area Infested by Brown-tail Moth Has Decreased

The area infested with the brown-tail moth has gradually decreased, and at present the moth is causing marked damage only in

FIG. 159.—Defoliated forest at Barnstable, Mass. Photo taken July 15, 1926. Nearly 50,000 acres were in this condition in the summer of 1926

limited areas along the seacoast in northern Massachusetts, New Hampshire, and Maine, and in some towns along the Merrimac and other rivers in New Hampshire. Persistent destruction of the webs of this insect, high winter mortality of the caterpillars in certain parts of the infested territory, and heavy parasitism of the insect by their imported enemies, have brought about this result.

The work on the gipsy moth and brown-tail moth is the most intensive that has been applied to any insect introduced into the United States, and the operations have extended over a longer period of years. The parasite work alone is the largest project of its kind that has been attempted in this country. An enormous amount of time and effort has been spent in protecting the nation as a whole from the ravages of these pests and the progress made up to the present time indicates that the efforts put forth are producing substantial results.

A. F. BURGESS.

MOVIES for the Farmer In making motion pictures during the last 14 years the department's "movie" directors and photographers have experienced many thrills. Flights in airplanes and balloons, climbing mountain peaks, and risking life and limb in photographing the fighting of forest fires and the blasting of mountain sides for road building have been their portion.

Not all the thrills have been theirs, however. Dangers quite as great have sometimes been experienced by those who have sought to overcome hostile public opinion by the use of motion pictures in the department's campaigns for the eradication of plant and animal diseases and insect pests.

Vigorous opposition, for instance, has often been met in some sections of the South in the campaign for the eradication of the tick which acts as a carrier of southern cattle fever. Some of the department's agents, provided with trucks equipped with motion-picture projectors, have gone into these communities with films showing the benefits of tick eradication. Threats have often been made to "blow up the tick wagon" and "beat up" the operator. In one such community, long known to be hostile to the project, the department's film, "Molly of Pine Grove Vat," was shown, despite such threats.

This three-reel picture shows how plucky people in one community eradicated ticks in spite of serious obstacles and opposition by a lawless element. The show began before an audience that included a crowd of bullies and the local bad man. With the unweaving of the story, however, which showed clearly that only selfishness and prejudice oppose the useful work of tick eradication, opposition melted. The leader, instead of whipping the department's agent, as he had said he would do, shook hands with him before he left. In other districts where opposition has been so strong as to make the efforts of tick eradication hazardous, the power of the silent drama has made friends of former opponents and is preparing the way for better livestock and more prosperous citizens.

Films on 300 Subjects

In the past 14 years, the department has produced films on more than 300 subjects, of which 230 are now in active circulation. From its laboratories in Washington it is distributing regularly more than 2,000 reels, while nearly as many reels of these subjects are being distributed by State agricultural colleges and other institutions that have purchased them. The department maintains its own production staff, and each year has been releasing 25 to 30 new films.

In its film production, the department has sought to make every film relate directly to its work and to give each one a definite educational purpose. Special effort has been made to present technical subjects so that they are easily understandable by the average layman. Human interest has been introduced wherever practicable. Applicability and value over the widest possible territory and to many classes of people have been considered essential. Competition with commercial producers of theatrical and educational films has been avoided.

A wide variety of important lines of the department's work already has been covered. Films now in circulation include the following subjects:

Beef cattle, dairy cattle, dairy products, diseases of cattle, parasites of cattle, horses, sheep, swine, diseases and parasites of swine, poultry production, poultry pests, wild game and bird protection, destructive rodents, cereal crop production, cereal crop handling, cereal insects and diseases, cotton production, cotton insect control, fruit production, fruit insects and diseases, truck crop production, plant diseases, home gardening, miscellaneous crops, farm engineering, types of road construction, food inspection, other inspection services, forest fire prevention, forest insects and pests and tree diseases, lumbering, scenic and recreational resources of the national forests in the East and West, reforestration, miscellaneous forest uses, bees and other insects, marketing of farm products, cooperative marketing, rural organization, agricultural extension work, boys' and girls' club work, rural sociology, and weather forecasting.

The field for distribution of the department's films includes, first of all, the widespread organization of the agricultural extension service, made up of county agricultural, home demonstration, and boys' and girls' club agents and subject matter specialists, employed

FIG. 160.—Studio work on a film dealing with nutrition

cooperatively by the State and Federal Governments and working in practically every agricultural county in the Union. A large proportion of these 4,700 agents now use these films regularly, others use them occasionally, and the remainder are prospective users. Other active users include the field staffs of the various bureaus, such as the forest rangers of the Forest Service and the animal disease control forces of the Bureau of Animal Industry.

Requests for Films Granted

Preference is given to film requests from these workers, but pictures have been sent whenever available to thousands of other applicants, including farm and community organizations, schools and colleges of every grade and kind, women's clubs, garden clubs, sportsmen's and breeders' associations, churches, Boy Scout troops, business

men's organizations, museums, theaters, fairs and expositions, conventions, hospitals, penitentiaries, hotels, and summer resorts, and for use by traveling lecturers and railroad development trains.

Films are loaned for use during periods ranging from a few days to six months. The number of film shipments from the Washington laboratory indicates the growing demand for the department's motion pictures. In the fiscal year ended June 30, 1922, the number of such shipments was 2,066; in 1923, 2,715; in 1924, 3,199; in 1925, 4,260; and in 1926, 4,276. Thus, in four years the number of shipments has more than doubled. The films in one of these shipments may be exhibited before 10,000 or 100,000 people or more before they are returned to the laboratory. Sales of prints, especially to State agricultural colleges, have increased steadily. With the purchase of projection machines by agricultural extension and farmers' organizations and by other classes of nontheatrical film users, the field for department films will continue to widen. The audience which now views them annually is, perhaps, 10,000,000 persons.

Extension Men Value Movies

County extension agents and other field men of the department who are in constant contact with the public are best able to estimate the value of educational films. From an inquiry sent to extension agents asking their opinion of the usefulness of motion pictures in their work, 982 replies were received. Of these, 820 favored using films, 149 were noncommittal, and 13 did not favor them at all. The opinions of many agents are well summed up in the following extract from the annual report of the county agricultural agent of Lyon County, Kans.:

> This was the first farm bureau in Kansas to purchase its own complete motion-picture outfit. Motion pictures have been exhibited at 52 meetings, to a total attendance of 6,008 people.
>
> The advantages of using motion pictures in conducting educational extension work might be summarized as follows: Holds attention of all audiences; increases attendance at meetings; brings out more forcefully and more intelligently the points desired; "seeing is believing," and more people put into practice things they can see and understand than those they hear about; a balanced and varied program can be put on to interest all in attendance; the agricultural agent can carry more specialized work to the farmers and be independent of outside specialized assistance; and the cost of maintaining extension work, figured on the basis of work accomplished and people reached, is materially reduced.
>
> The disadvantages from using motion pictures are that the county agent is forced to do more night work, work considerably longer hours, take on the added responsibility of pleasing more people and never disappointing them, take on the worry and grievance that is bound to come from the delicate mechanism of motion-picture machines and apparatus, travel all kinds of roads in all kinds of winter weather, and be content with using the kinds of films that can be secured.

The Department of Agriculture is impressed with the efficiency of motion pictures in advancing its work. Most of the important extension or educational projects have included the making of a film for campaign use, and motion pictures are now regarded as one of the essential field guns in educational campaigns. Films will not, however, displace other methods of presenting information. Lantern slides, for instance, have their own particular use. Just as it is impossible for the slide to perform the function of the motion pic-

tures, so it is not possible for the motion picture to take over entirely and efficiently the function of the slides.

The one big use of the educational motion picture is to "break the ice" and create favorable sentiment for a particular movement. Used in advance, it makes the way easier for the main effort. Backed by efficient follow-up work, it has achieved results that are truly notable. Wisely used, it will continue to do so.

FRED W. PERKINS.

MUNG Bean in United States Agriculture The mung bean, green gram, or golden gram is native to southern Asia. It is undoubtedly of very ancient culture, as it is grown by the natives throughout the southern half of Asia and the principal Malayan Islands as well as in southeastern Africa. In these countries the mung bean is grown mainly for the seed, which is an important article of human food, but in India the straw is also prized as forage for livestock.

The mung bean was introduced into American agriculture as early as 1835, when it was known as the Chickasaw pea, and somewhat later as the Oregon pea. Notwithstanding its wide testing thus early in the Southern States and much testing in recent years, the mung bean has not been able to find a place in American agriculture in competition with the cowpea and soy bean.

Varieties of mung beans are very numerous, differing in habit, maturity, and the shape, size, and color of seeds. The seeds are spherical in most varieties, and green, yellow, brown, or marbled in color. During the past 20 years the Department of Agriculture has introduced about 150 different lots of mung beans from various sources. Extensive tests have been conducted at several experiment stations and by various individual cooperators. Although the varieties exhibited a wide range of comparative excellence, it has seemed rather doubtful if the best would prove a permanent addition to any type of the American farming system.

Extensively Used as Food

As a food, the beans are extensively used, especially in China, supplying the people with bean sprouts, bean vermicelli, and bean gelatin. As a food crop in America the mung bean will not compete with common field beans and peas, but it may find considerable use for sprouting. Considerable quantities of mung beans are imported into the United States, and have been utilized almost entirely by Chinese restaurants for sprouting. Within the past two years several factories in the United States have undertaken the canning of mung-bean sprouts, using imported beans. The canned sprouts, which are an excellent article of food, have found a good market. The popularity of bean sprouts may be said to be almost nation-wide, and the use of the sprouts as a green vegetable has been experimented with more especially by many schools of domestic science; their use is being encouraged by many hospitals and dietetic schools. Undoubtedly, with an increase in the use of the canned sprouts, the production of mung-bean seed in certain sections can be made a profitable industry.

Although under present economic conditions the mung is not to be recommended as a general farm crop, it has apparently a place in certain systems of agriculture. To a limited extent the production of beans suitable for sprouting meets the needs of the canning industry. The mung bean is an excellent poultry food, both as a pasture when mature or sprouted as a green winter feed in the same way that sprouted oats are used. In a few sections the mung bean has been used as a forage crop. A most important factor in the culture of the crop is its freedom from attack by the Mexican bean beetle, which has caused so much damage to bean crops, especially in the Southern States.

W. J. Morse.

NATURAL Plant Cover and Soil Potentialities The use of vegetation as an aid in forecasting the agricultural possibilities of unimproved lands originated with primitive man and was used to some extent by the early settlers in our own country. Primitive man, with plenty of land on which to locate his fields, chose only the best. He was guided in his choice largely by the natural plant growth and the wealth of accumulated experience as to the type of crop to be grown on land characterized by different types of native vegetation. This method was also used in the older farming sections of our own country, but without scientific study it could only be used successfully where there was accumulated experience to serve as a guide. With our rapid migration into new and unknown territory in many cases having no agricultural history, the choice of land fell either on chance or was directed by exploiting agencies. It thus happens that in the newer settlements farms will frequently be found located on types of land least suited to crop production, or, again, equal settlements in regions of very unequal potentiality.

By a careful study of the types of natural vegetation and the type of soil and climate associated with each, and by the use of all available agricultural history, it has been possible to assign to each type of vegetation a value in terms of agricultural potentiality. Intensive studies of this kind have been made on the high plains, in the Great Basin, the Colorado Desert, and more extended but less intensive investigations in other portions of the United States. Practical application of these studies has been made by the Geological Survey in the classification of the 640-acre homesteads. Many of these homesteads, located in regions with little or no agricultural history and no climatic data, were readily classified on the basis of the natural plant cover.

Estimating Soils by Their Plant Growth

One can easily estimate the relative worth of an acre of land covered with cat-tails as against an acre of oak and hickory; an acre of willows as against the same of hard maple; sagebrush as against seep weed. It is more difficult to distinguish between the value of an acre of land covered with hard maple and one of white oak, or an acre of sagebrush and one of shad scale. In the case of sagebrush and shad scale, studies have made it possible to give the two types separate values. A good, healthy, uniform stand of sagebrush

indicates land well adapted to dry farming. However, dry farming on shad-scale land is not advisable, as it involves too great a risk. Again, sagebrush land is well adapted to irrigation farming. Shad-scale land, even under irrigation, requires careful handling and especially where it borders greasewood or is mixed with greasewood there is much chance of future alkali trouble.

In the southwestern deserts the lands covered with a good stand of desert sage will be farmed wherever there is water available for irrigation. The bulk of the best land farmed at the present time is of this type. Although creosote bush indicates land with a lower salt content, it is more often sandy or stony, not so level and less fertile, so that a smaller percentage is fit for farming.

On the other hand, lands covered with good growths of seep weed, saltbush, pickleweed or salt grass are mostly unfit for farming or hazardous at best. The high water table and the high salt content call for reclamation and for intelligent and special handling.

That the native vegetation can be used as a criterion in making estimates of the crop possibilities of land still unimproved is substantiated in comparisons of the large agricultural or nonagricultural areas of the United States with the areas of native vegetation.

The greatest block of agricultural land in the United States was that originally covered by the tall-grass prairies. As we pass westward, the tall grass gives way to short grass and there is a corresponding change in agriculture. Farms give way to ranches; with the increase in size of farms goes a decrease in land in crops and an increase in grazing land as crop production becomes less certain and the land becomes better adapted to grazing. Within the tall-grass area the type of farming is indicated to some extent by the type of vegetation.

Corn Belt in Tall-Grass Area

The great Corn Belt lies in the central portion of the tall-grass area, the area characterized by bluestem sod grasses. The spring-wheat area is largely in the wheat-grass area. The best of the short-grass lands is the grama-stipa portion lying in the Northeast, whereas the poorest, from this point of view, is the Muhlenbergia lying in the Southwest. Crops can be produced with fair certainty on grama-stipa land or grama-buffalo-grass land, but are very doubtful on Muhlenbergia land. In the Northwest the wheat-grass sod lands of Washington and Oregon are now given over largely to the production of spring wheat. The only forest area of the west which is giving way to agriculture is the cedar-hemlock forest of western Washington and Oregon.

One of the areas showing practically no agricultural development is the spruce-fir area, covering the higher altitudes of the Rocky Mountains, of the West Coast Range, and of the northeastern highlands of New York and the New England States. The spruce-tamarack area of the Great Lakes region, which has no agricultural value in its original state but is capable of reclamation, shows slight agricultural development.

Contrasted with the spruce-fir, which has no agricultural value, the cypress, tupelo, and red gum of the southern lowlands has been largely turned to agricultural land. In its original state, like the

spruce-tamarack, it has no agricultural value though its capabilities after reclaiming are high.

Vegetation a Guide to Scientists

The natural vegetation can also serve a very useful purpose in indicating the limits of the region over which any experimental data, climatic data, or agricultural history can be applied with a reasonable degree of safety. Often the results of an experiment station nearest the local farm should not be applied, but preferably those of a station located in a region showing the same type of vegetation even though it might be more distant. It may, therefore, serve as a useful guide to agriculturists in the application of agricultural history or the results of scientific experimentation.

If rightly understood, the natural plant cover indicates the suitability of land for crop production, either with or without irrigation, and offers an important indicator not only of the kind of crop but also of the most desirable type of culture. A large economic waste might be prevented by correctly determining the future use of land. The natural vegetation affords a sound basis for such a determination.

H. L. SHANTZ.
R. L. PIEMEISEL.

NEMAS and Recent Progress in Nematology Research

Nemas[15] are eel-shaped organisms varying more in relative size than animals of other groups, the smallest being one two hundred and fiftieth of an inch long when full grown, while the largest is several feet long with a diameter of a slender lead pencil. The largest vertebrate organism on the same relative scale would be a good fraction of a mile long instead of about 100 feet long, as is actually the case (the largest fossil).

Nemas are among the most abundant and widespread of all organisms—so abundant that if all the other matter in the universe could be magically swept away and we could then as disembodied spirits revisit these scenes, we should find them still recognizable. There would still exist in space a hollow sphere, the size of the earth, represented by a surface film composed of the nemas formerly inhabiting the mundane soil and waters, plants and animals. We could recognize lakes, rivers, and oceans by the nemas peculiar to them. So, too, we could recognize the soil and tell where there had been one kind of soil and where another. We could recognize the cities by accumulations of nemas peculiar to human beings and domesticated animals and domesticated plants. The trees would still stand in ghostly rows along the streets, represented by the nemas that once inhabited the bark of their trunks and branches.

Nemas are highly organized. Take man as a standard. The human body consists of a number of systems of organs; nervous system, digestive system, respiratory, glandular, circulatory, sexual, etc. Now in spite of its minuteness a nema contains all these systems except the circulatory and perhaps respiratory—it has no heart or blood vessels and no definite lungs. It is one of the miracles

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[15] Nematodes—roundworms.

of organization that all these systems are packed into a narrow microscopic speck only about one two hundred and fiftieth of an inch long.

Nemas vary among themselves very much and do a multitude of different things. They can digest all sorts of food—not that any one species can digest all sorts of food, but that among them, one or another, they have learned to digest starch, fats, proteids, and practically all other kinds of nutritious matter. It is not surprising, therefore, that they are so widespread. Wherever there is a speck of nutriment we are no longer surprised to find nemas, whether it be in utter darkness miles below the surface of the sea, or in some niche, brought for a little while above the freezing point once a year by the midsummer sun in the Antarctic Continent far beyond the range of any quadruped or bird, and, so far as we know, of any insect—not of course beyond the range of microscopic plants, for nemas are animals and must have organic food.

Nemas of Economic Importance

Nemas are of great economic importance, but the world is late in recognizing this, largely because most nemas are so small and because the technic of their examination is difficult. They are responsible for some of the worst and most destructive diseases of plants and animals, and are responsible for annual losses aggregating billions of dollars, and for death, suffering, and inefficiency on a large scale among human beings and their domesticated animals and plants.

Though nemas were known in very ancient times, and have been studied scientifically for 150 years, it is only quite recently that their full significance has begun to be recognized and emphasized. The eighteenth and nineteenth century scientists, knowing nemas mainly as parasites, gave little heed to the host of free-living aquatic and terrestrial nemas.

One of the most outstanding recent advances in nematology is a radical change in conception—a recognition of the biological significance of the free-living nemas. This recognition now steadily influences us, changing our conception of what nemas are, what their structures signify, how to interpret their behavior, what their relatives may be, and how, by specialization, the parasites arose from various free-living types. The completion of this revolution will reveal nematology as a definite and important branch of natural science, its designation no longer confused with or obscured by such terms as helminthology and parasitology, and dealing with one of the most definitely marked of all phyla, consisting of an enormous number of exceedingly varied species astonishingly widespread.

The occurrence, on a great variety of nemas, of segmented organs—setae, mandibles, deirids, spicula—and the orderliness of the annules and external appendages; together with the numerical relationships involved, are among the most strikingly suggestive of all the recently disclosed features of nemas.

Our recently acquired better knowledge of the sense organs of nemas, and especially of the amphids, has far-reaching theoretical and practical results. It has been recently determined that the amphids, not previously properly recognized in the parasites, but classed there as papillae, are fundamental features, always present.

Taking the amphids of the free forms as a basis, the amphidic nature of the so-called lateral papillae of the parasites has been demonstrated. The amphids, together with the other head sense organs, have important taxonomic interest, becoming also a means of identifying larval nemas only somewhat less accurately than adults.

Amphids a Factor in Nema Life

The importance of such an aid in studying nemic diseases, where the larva passes from freedom to host and from host to host, can hardly be overemphasized. The amphids now appear a primary factor in the behavior of nemas, each species having amphids of a specific form and function. They are believed to act in such important matters as orientation, finding food, locating proper life environment, and seeking the other sex. How far-reaching, even for practical purposes, this knowledge may be, is seen in recent attempts of German scientists to apply chemical stimuli (believed to reach the nema through the amphids) to bring the sugar beet nema, a most serious pest, to development at a time when other conditions are unfavorable for it, so that it perishes.

Another novel development in nematology, based on recent careful experiments, is the proposed use of nemas for the control of insect pests. For instance, certain nemas, mermithids, are a very important factor in decreasing the birth rate of grasshoppers, and may prove available as a grasshopper control. Certain soil-inhabiting nemas, for example certain mononchs, prey upon the gall nema, one of the worst of all agricultural pests, and have been the subject of promising initial investigations in this new direction.

Nemas continue their historic rôle of originally furnishing profoundly suggestive facts connected with the subject of heredity, recently furnishing a parallel to the alternating haploid generation in plants.

Recent discovery of a wide diversity in the cells of the nemic intestine explains the diversified digestion of nemas, and hence their wide distribution in nature. Information of this sort is a very important aid in determining the probable character of the numerous new nemas constantly being discovered, since it aids in forecasting whether or not they may prove to be serious pests.

In the control of nemic diseases of man, animals, and plants, advances of outstanding importance have been made in the use of drugs and the development of sanitary and cultural measures based upon more detailed knowledge of the life histories of specific nemas. Notably the introduction of carbon tetrachloride (CCl_4) and later tetrachlorethylene (C_2Cl_4), used alone or combined with other drugs, for the removal of hookworms in man and animals has been of special merit. The stabling, pasturing, and transportation of animals, the methods of culture of crops, and the methods of handling them in manufacture and in commerce, have been, in numerous cases, profoundly altered by the application of recently acquired knowledge of nemas and their relationships.

Internal Structures Connected

What other animals are most closely related to nemas is still a mystery. Pores connecting with longitudinal series of internal

organs have long been known to exist in nemas. Latterly these pores have been discovered in a much greater variety of genera, and, in a few cases, it has been discovered that the corresponding internal structures are connected with each other, and that a liquid is at liberty to flow along the internal tubular connections. That these structures may be homologous with corresponding lateral systems in other phyla, is a recent suggestion aiming at a solution of the mystery.

Current science involves a vast amount of detail work; only through the accumulation of details are the great generalizations made possible. In the science of nematology recent years have seen accomplished a vast amount of detail work; much knowledge concerning nemas has been accumulated, which, although it can not be touched on here, is a prime incentive for further progress.

A number of improvements in microscopic technic devised by nematologists have helped very materially to make possible the recent advances in nematology.

N. A. Cobb.

NEWS Service on Grain Markets Development and extension of the grain market news service during the past few years has brought to an increasing number of farmers the timely, accurate, and comprehensive interpretation of factors influencing the market which is necessary to an intelligent understanding of the market situation. Such information has long been available to traders on the large exchanges and through them has been made available to other large dealers. Farmers in general, however, have had only the price quotations and futures market comments to guide them in their marketing operations with little information relative to the basic factors which determine price trends. The grain market news service is giving to the farmers not only domestic but world-wide information which directly affects the prices farmers receive for some of their grains and which has not previously been readily available to farmers from other sources.

The grain market news service has three major activities: (1) The assembling of crop and market information both domestic and foreign; (2) the interpretation and analysis of the material assembled; and (3) the distribution of this information through special and regular reports and reviews.

Broad Field Covered

The material assembled covers a very broad field and comes from a great number of sources. It includes both foreign and domestic reports of crop conditions, acreage, and production estimates; stocks of grain in various positions; grain movement in commercial channels and into consumption; the probable supply, demand, and price trends, as well as special reports from various sources which are of value to the American farmer in marketing his crop.

Analysis and interpretation of these reports must be done quickly so that the information may reach the farmer while it has the greatest possible value. To facilitate this work various statistical devices such as charts, graphs, and tabular statements of receipts, prices, supply and distribution, grain stocks, exports, imports, etc., are kept

up to date and ready for use at any time with the latest available information.

The speedy distribution or dissemination of the material received is one of the most important phases of this service. The weekly grain market review which is the principal medium of distribution is prepared in the Washington office each Saturday morning. Reports summarizing developments in domestic markets during the week and including comments on the foreign situation which are influencing the domestic markets are received by telegraph from representatives of this project in all of the important markets of the United States.

Reports Are Telegraphed

The information contained in these reports is combined with that from the other sources noted and incorporated in the review. Copies of this report are forwarded immediately by telegraph to Minneapolis, Chicago, Kansas City, Fort Worth, and San Francisco, where they are mimeographed upon receipt and delivered directly or mailed to newspapers and other agencies and individuals receiving the reports from those offices. They are also mimeographed at the Washington office and distributed to the Southern and Eastern States. In general, the reviews are available for publication or broadcasting on Monday in the principal producing and consuming areas.

According to a recent survey, more than 300 newspapers with a circulation of over 5,000,000 were printing these reviews regularly, about a dozen of the larger radio stations were broadcasting them, and several hundred copies were being mailed to State marketing officials, county agents, and other interested individuals who had requested them.

In addition to these regular reports, special market reviews and numerous press releases relative to market conditions of particular interest are given out from time to time through the press service of the department. Reviews covering commodities of special interest to certain sections are also issued. These include a barley review for the California barley growers who must depend upon an export market for the disposal of much of their crop, a corn review prepared for the farmers in the Corn Belt, and a price service for spring wheat farmers giving premiums paid at the principal markets for high protein types of wheat.

Weekly Grain Stocks Reports

Another recent, important development of this project has been the weekly compilation and release of domestic grain stocks in commercial channels. These stocks include the grain in store and afloat at the principal markets. The quantity of Canadian grain in store in bond in United States markets is given and the United States grain in store in Canadian markets. These data are more nearly complete than previous statistics and provide a better figure for use in computing the domestic grain supply.

With the information which this service provides readily available to all important farming areas of the country, farmers are in a better position to plan and adjust their marketing programs to prevailing conditions and to secure more profitable returns for their products.

G. A. Collier.

NEWS Service on Farm Feedstuffs The feed market news service provides timely and accurate information concerning feedstuffs which farmers buy. Most farmers buy some feed, particularly high protein concentrates, and some buy large quantities. The cost of these feeds makes up one of the largest items in farm expenses in the United States. The farmers feed bill in 1909 totaled nearly $300,000,000, and in 1919 over $1,000,000,000. With such large quantities of feed to buy, dependable market information is of great value to farmers and dairymen in making their feed purchases. In addition, the spread of authentic information tends to stabilize market conditions and to reduce marketing costs.

The feed market news service provides reliable information upon wholesale market conditions, together with representative quotations on feeds at important markets. It shows the production of important by-product feeds, the prices current at the principal markets, and the immediate demand for these feeds as indicated by the way they are being taken at the prevailing levels. Various local conditions which affect the market and are of great interest to buyers are included from time to time.

Material from widely scattered sources is utilized in the preparation of the reports issued by the service. The production of important feedstuffs is obtained at regular intervals and in some cases this is supplemented by inquiries direct to manufacturers. Imports and exports of feedstuffs are obtained monthly. Weather conditions are considered in their effect upon the demand for feedstuffs as are also the supplies of feed grains and of hay available in various areas. The exchange of reports with foreign correspondents supplies valuable information concerning the effect of foreign demand upon the domestic feed market. Representatives or correspondents at all the important markets of the United States telegraph market conditions and prices at those points each week or more often, depending upon the importance of the market.

Reports Quickly Distributed

Based on this material weekly reports are prepared covering the market developments and the factors underlying price changes for bran, shorts and middlings, linseed meal, cottonseed meal, gluten feed, hominy feed, alfalfa meal, tankage, and dried beet pulp. In order to make this information available promptly this weekly feed market review is telegraphed to Chicago, Kansas City, and Minneapolis for distribution by mail or radio from these cities. It is also mailed from Washington the same day and should be available within 24 hours at practically all points in the United States east of the Rocky Mountains. The reports are furnished upon request to individuals, farm organizations, and farm and trade papers.

Through cooperation with state departments of agriculture a special service is furnished farmers in a number of States which are important buyers of feeds. Brief statements of market changes are supplied, together with representative delivered prices at convenient points based on current wholesale market prices. These quotations enable farmers to compare feed costs and encourage economical buying.

Additional distribution is given feed market information through reports prepared for radio stations, farm papers, and cooperative purchasing organizations. From time to time special reports are prepared for cooperating State departments of agriculture with especial reference to local conditions in their territories. Other material of more general interest is given wider publicity through press releases, farm papers, and trade journals.

Prices Are Affected

Wide distribution of this information helps to make market prices reflect more closely the balance between the supplies of the various feedstuffs and the probable feeding requirements as well as to keep local conditions in line with the changes at terminal markets. It also assists farmers to plan their feeding practices to take advantage of feeds which may be plentiful and relatively low priced at any time.

H. S. IRWIN.

NITROGEN Availability Varies in Green Manures The gradual change in this country from the extensive system of farming of the pioneer farmer to the more intensive type necessitates the more widespread use of fertilizing materials. Animal manures have always held first place in maintaining the nitrogen balance of soils, but the increased demand for nitrogenous fertilizers without a corresponding increase in production of animal manures has stimulated the use of artificial fertilizers and leguminous green manures. In certain sections, especially those with a short growing season, artificial nitrogenous fertilizers undoubtedly are wisely used. There are other sections, however, and this comprises the greater part of the country, where conditions favor the use of green manures. The availability of the nitrogen in these manures is therefore an important point.

Experiments reported by various workers have shown that the availability of the nitrogen in leguminous green manures varies widely, due for the most part to the quality and quantity of the green substances, the character of the soil, temperature and moisture, and the time of application. Immature material has a higher nitrification than old, but this is often more than compensated by the lower weight of the young plants. If applied to rich soil, a stimulation of the biological activities of the soil may occur, resulting in the production of nitrates from the soil humus and in the recovery of more nitrogen in the first crop than had become available from the green manure. Periods of high temperature of air and soil with sufficient moisture hasten the nitrification of green substances resulting in an accumulation of nitrates. Losses through leaching are liable to occur if replanting is delayed too long.

Much Variation in Availability

In view of these facts, it is not surprising that the nitrogen availability of leguminous green manures may vary from 10 to 80 per cent.

As a rule, 40 to 50 per cent return may be expected under ordinary conditions. This compares favorably with the availability of nitrogen in animal manures but, as might be expected, it is not ordinarily as high as the return from artificial fertilizers. However, the lower efficiency of the organic manures is probably more than offset by the production of carbon dioxide from the decaying material, by the improvement in the physical condition of the soil, and by other influences affecting the biochemical activities of the soil.

The beneficial effect of legumes whether grown for green manure or for hay upon succeeding crops is influenced by a number of factors. Most attention has been directed to the increase in soil nitrogen through the activity of the bacteria in the root nodules. Since these organisms furnish the growing legume with most if not all of its nitrogen, thorough inoculation is therefore essential. Much also depends upon the selection of legumes to be grown. Those adapted to the particular soil and climate and which make a vigorous growth should be chosen. Good tilth and a neutral reaction of the soil are very important if the most is to be realized from the legumes. The production of seed in some cases reduces the after effect, notably in the case of soy beans.

Effects of Uninoculated Legumes

Legumes grown without inoculation and free of nodules show a beneficial effect when used as green manure but there is no indication that this influence is any greater than that produced by nonlegumes under the same circumstances. Obviously such an effect can not be explained by symbiotic nitrogen fixation. In some cases, the transportation of minerals such as phosphates and potash from the subsoil to the surface has been partly responsible. In other cases, the suppression of weeds by the thickly growing plants and the improvement in the physical condition of the soil have had their influence. In nearly all cases, however, increased bacterial activity of the soil, especially an intensified nitrification has been observed. Since uninoculated legumes and nonlegumes do not add to the store of nitrogen already present in the soil, no lasting benefit can be expected from the increased production of nitrates unless the nitrifiable material of the soil is replenished by organic manures or by the growth of inoculated legumes.

The growing of inoculated legumes effects the microflora of the soil as well as succeeding crops. The total numbers of bacteria are increased. Certain groups such as the *Bacillus radiobacter* and related groups are greatly stimulated. Since these organisms are known to be able to fix small amounts of nitrogen, it is conceivable that they may be partly responsible for the increase in soil nitrogen under legumes.

NATHAN R. SMITH.

NITROGEN Fertilizers Listed and Described The rapid development of nitrogen-fixation processes during the World War has resulted in a large increase in the quantity of nitrogen available for fertilizers. The capacity of the fixation plants in Germany has been increased and new plants built, and other countries have constructed nitrogen-fixation

plants. The result of such developments has been the production of a number of new materials, several having come from Germany under special trade names. The following is a list of these principal products with a brief description of each:

Ammo-phos, a mixture of ammonium phosphate and ammonium sulphate produced in the United States. One grade contains 13 per cent of ammonia and 47 per cent of phosphoric acid, and another grade contains 20 per cent ammonia and 20 per cent phosphoric acid. The production costs up to the present have been too high to allow a general consumption of this material.

Ammonium phosphate, a salt obtained by treating liquid phosphoric acid with gaseous ammonia. It contains 14.8 per cent ammonia and 61.7 per cent phosphoric acid.

Leuna-saltpeter, a double salt of ammonium nitrate and ammonium sulphate, containing 31.5 per cent ammonia. About one-fourth of the nitrogen is nitrate and the remainder is ammonia nitrogen. It is equivalent to a mixture of 165 pounds of ammonium sulphate and 100 pounds of ammonium nitrate.

Urea (or floranide), a compound manufactured by combining ammonia and carbon dioxide gas. It contains 46 per cent of nitrogen, which is equivalent to 55.6 per cent ammonia.

Nitrate of lime or calcium nitrate, a compound of lime and nitric acid so treated as to give a physical condition suitable for broadcasting. It contains 15.5 per cent of nitrogen, equivalent to 18.8 per cent of ammonia, and 28 per cent of lime.

Potassium-ammonium nitrate, a mixture of potassium and ammonium nitrates containing 15.5 per cent nitrogen, equivalent to 18.8 per cent ammonia (half as ammonia and half as nitrate nitrogen), and about 27 per cent of potash.

Diammonphos, a compound containing ammonia combined with phosphoric acid, which contains 23 per cent of ammonia and 47 per cent of phosphoric acid.

Leunaphos, a mixture of diammonphos and ammonium sulphate, containing 24 per cent ammonia and 15 per cent phosphoric acid, or a ratio of one unit of nitrogen to three-quarters unit of phosphoric acid.

Leunaphoska, a mixture of leunaphos and potash salt, which contains 13 per cent of nitrogen, or 15.7 per cent of ammonia, 10 per cent of phosphoric acid, and 13 per cent of potash.

Soda-potash-nitrate, a mixture consisting of 75 per cent of sodium nitrate and 25 per cent of potassium nitrate, and containing about 14 per cent of nitrogen, or 17 per cent of ammonia, and from 10 to 13 per cent of potash.

Calcium cyanamide, a nitrogen salt, the first of the nitrogen-fixation products to be used in fertilizers. It contains from 20.5 to 25 per cent of nitrogen (equivalent to 24.5 to 30 per cent of ammonia), and from 10 to 15 per cent of lime.

Phosphazote, a product obtained from calcium cyanamide by treating it with carbon dioxide, and then rock phosphate is mixed with it. The product contains about 12 per cent of ammonia and 12 per cent of phosphoric acid.

R. O. E. Davis.

NITROGEN Fixation Progress The growth of the art of nitrogen fixation during the past 20 years from a rather uncertain experimental stage to the present industry which now supplies about one-half of the world's supply of inorganic nitrogen represents a most remarkable achievement. It is true that much of the rapid development of this art occurred under the urge of military necessity and that considerable impetus for the present expansion is being supplied by the desire of each country to acquire for purposes of national defense an independent source of combined nitrogen. There is, however, behind the industry the great and growing demand for nitrogen in agriculture, which assures it a permanent and stable position in our economic scheme.

FIG. 161.—The Fixed Nitrogen Research Laboratory of the United States Department of Agriculture

There are three principal sources of combined nitrogen suitable for our present demands: (1) Ammonia obtained as a by-product in coke and gas production; (2) Chilean nitrate, and (3) the various products of atmospheric nitrogen fixation. The increased consumption of inorganic nitrogen during recent years has been very largely supplied by the latter source and the indications are that it will continue to furnish the greater part of the increased demand in the future.

The quantities of combined nitrogen supplied by each in 1925 were as follows: Atmospheric fixation, 607,000 metric tons; Chilean nitrate, 340,000 metric tons; by-product ammonia, 330,000 metric tons. The greater part of this total of 1,277,000 metric tons, probably nearly 90 per cent, was used in agriculture.

The problem of nitrogen fixation is that of making available in combined and useful form the free nitrogen which comprises four-fifths of our atmospheric air. Three methods of accomplishing this have attained commercial importance. The arc process, in which the combination is effected by passing air through a high temperature electric arc, was established in 1905 in Norway. Its power consumption is very large and for that reason its commercial application has been largely confined to Norway, where cheap water power is abundant. The chief final product of this process is a fertilizer salt, nitrate of lime, which is obtained by neutralizing the oxides of nitrogen from the arc with lime.

In the cyanamide process, calcium carbide at high temperatures is made to react with gaseous nitrogen to form a compound of calcium, carbon, and nitrogen, called calcium cyanamide. This product has found considerable use as a fertilizer, but certain undesirable properties have definitely limited its consumption.

The synthetic-ammonia process is the newest method and it has, because of its rapid development since 1913, contributed most to the growth of the nitrogen-fixation industry as a whole. In this process, purified hydrogen and nitrogen gas are made to combine at high pressures and temperatures in the presence of a catalyzer to form ammonia. This ammonia may be transformed readily into a variety of salts suitable for fertilizer use.

Table 19 shows the growth of these processes during the past decade.

TABLE 19.—*Production of nitrogen in metric tons per year for 1915, 1920, and 1925*

Process	1915	1920	1925
Arc	15,000	25,000	37,000
Cyanamide	100,000	140,000	170,000
Synthetic ammonia	25,000	110,000	400,000

Germany is still the center of this great industry and her present output probably accounts for 70 per cent of the world production. The expansion in other countries has been very rapid in the last few years. The United States, which five years ago had no plants for the fixation of atmospheric nitrogen, now has seven synthetic-ammonia installations with a combined capacity of about 80 tons per day. None of this present output is finding its way directly into fertilizers, but it is having the indirect effect of forcing more of the by-product ammonia into agricultural uses. The projected plans for expansion indicate that it is only a matter of a few years before the products of atmospheric fixation will be competing directly with other sources of fertilizer nitrogen in this country also.

Fixed Nitrogen in Agriculture

Nitrogen, potash, and phosphorus are the three important elements of plant food and hence the desirable constituents of fertilizers. It was realized long ago that fixed nitrogen, because of its limited occurrence

in nature, would present the greatest problem in the maintenance of soil fertility and that the nitrogen of the air would have to be the ultimate source. The nitrogen fixation processes have gone far in making available more and hence cheaper combined nitrogen. In addition to increasing greatly the world's supply of nitrogen, the development of atmospheric-nitrogen fixation into a highly competitive industry is having the effect of directing attention to the whole problem of producing better and more concentrated fertilizer materials. Many such fertilizer salts are now being produced and marketed as a direct result of the influence of the synthetic-nitrogen interests. Among them may be mentioned ammonium nitrate, particularly in admixture as mixed salts with ammonium sulphate and potash compounds, calcium nitrate, urea, which contains 46 per cent nitrogen, and phosphates of ammonia in which the plant food phosphoric acid serves as a carrier for the nitrogen. Practically all of this development has occurred in Europe, where the problem of soil-fertility maintenance is more acute than in our own country, where the availability of new land has postponed the necessity of practicing more intensive agriculture.

It is only a question of time, however, before we too must turn toward more intensive methods of agriculture, and the growth of the nitrogen-fixation industry now impending in this country is certain to be an important factor in the soil-fertility problem of the near future.

J. A. Almquist.

Nitrogen From the Air Makes Good Fertilizer Nitrate of soda from the Chilean fields and small deposits of potassium nitrate are the only natural supplies of nitrogen in a form available for fertilizers.

Other available forms are by-products; ammonium sulphate from coke ovens, gas works, etc., cottonseed meal from cotton, animal tankage and dried blood from slaughterhouses, fish scrap from nonedible fish and small quantities of material from other sources. The by-products containing organic nitrogen are being used more and more for feeding purposes and the supply available for fertilizers is becoming smaller and smaller. As a result of this condition the attention of investigators in recent years has turned to the production of nitrogen salts by obtaining nitrogen from the atmosphere through chemical methods. The effect of air-derived nitrogen salts in commercial fertilizers on crop production is now a much discussed subject by farmers, fertilizer manufacturers, and investigators.

The development of nitrogen-fixation processes and the operation of nitrogen-fixation plants is making available to agriculture a large supply of high-analysis nitrogen salts. Information concerning their effect on crops and suitability for use as fertilizers is of considerable interest.

The materials which have received most attention by manufacturers and investigators are ammonium chloride, which contains 31.8 per cent ammonia; ammonium nitrate containing 42.5 per cent ammonia; urea containing 55.6 per cent ammonia; urea phosphate containing 21.5 per cent ammonia and 45 per cent phosphoric acid; ammonium phosphate containing 14.7 per cent ammonia and 61.7

per cent phosphoric acid. All of these materials possess a high plant food content, as is evidenced by a comparison with nitrate of soda, which contains 18 to 19 per cent ammonia. That the greater use of chemical salts in the maufacture of fertilizers possesses a marked trend is shown by the much greater production of air-derived nitrogen salts, especially in Europe.

Great Increase in Nitrogen Fixation

It is estimated at present that at least one-half of the world's inorganic nitrogen comes from the atmosphere through nitrogen-fixation methods, as against only 7 to 8 per cent in 1913.

Experiments to determine the effect of these concentrated air-derived nitrogen salts under American farm conditions have been made covering a period of several years with cotton, potatoes, corn, garden, and truck crops. These have been located on official test farms and on commercial farms on some of the principal soil types in the Eastern States. (Fig 162.) The effect of the air-derived nitro-

FIG. 162.—One of the experimental fields used by the department to test the effect of new nitrogen fertilizers on cotton

salts, when used in mixed fertilizers with acid phosphate and potash, has generally been good, and compares favorably with nitrate of soda and sulphate of ammonia.

In the fertilization of cotton, ammonium nitrate and urea have proven to be very good forms of plant food and have produced larger yields than did ammonium chloride, which has given a relatively smaller production than other nitrogen materials. The use of these air-derived nitrogen salts containing relatively high concentrations of ammonia when used in mixed fertilizers under cotton has not produced any injurious effect on germination or on the plants in the early stages of growth. Neither has there been any indication of unusual leaching from the soil.

With potatoes, a crop requiring large quantities of fertilizers, the air-derived nitrogen salts have shown up well. Fertilizers having their nitrogen derived from these concentrated materials have produced as large yields as those having their nitrogen derived from nitrate of soda or sulphate of ammonia. This has proven true in all the large potato-growing sections of the Atlantic seaboard.

Successful With Truck Crops

These new fertilizer salts have also been successfully used with garden and small truck crops, which make a rapid growth, fruit, and mature in a relatively short period. Their effect on garden peas, Lima beans, snap beans, and sweet corn has been good, producing somewhat larger yields than has nitrate of soda or sulphate of ammonia.

Although the effect of air-derived nitrogen salts, most of which are highly concentrated, on crop growth and production, are generally good when used in mixed fertilizers, there are difficulties to overcome. The keeping qualities of fertilizers as to caking, moisture, etc., and the ease with which they can be distributed in the field are important factors. Some of them, like ammonium nitrate, may have undesirable physical features in bulk mixtures or in storage and require that methods of preparation, mixing, storage, and application may have to be worked out, as had to be done with some of our ordinary fertilizer salts and their mixtures.

Small quantities of nitrogen-fixation products are now being used in commercial fertilizer mixtures, but their introduction into general use will no doubt be gradual, as it should be, in order to allow sufficient time to overcome the difficulties which may arise in commercial mixing and farm application.

J. J. SKINNER.
B. E. BROWN.

OAT Varieties for the Winter Wheat Belt Yield Well

Three new oat varieties belonging to the common oat group (*Avena sativa* L.) have achieved economic importance in the winter wheat belt. They are Albion (Iowa No. 103), Richland (Iowa No. 105), and Iowar. All are early varieties and all were developed as pure-line selections from the well-known and widely grown Kherson or Sixty-Day oat, introduced into this country from Russia by the United States Department of Agriculture and the Nebraska Agricultural Experiment Station about 30 years ago. They were produced in extensive cooperative oat-breeding experiments conducted by the Iowa Agricultural Experiment Station and the United States Department of Agriculture. Albion and Richland were selected in 1906 by L. C. Burnett and were first distributed to Iowa farmers as Iowa Nos. 103 and 105 in 1913 and 1914, respectively. The Iowar was isolated by Mr. Burnett in 1910 and first distributed to farmers in 1919.

Because of their white kernels the Albion and Iowar have met with the most favor. It was estimated that the Albion was grown on nearly 1,400,000 acres in Iowa alone in 1924, with perhaps an equal or greater acreage distributed throughout central Illinois, northern Missouri, northeastern Kansas, and eastern Nebraska. Iowar was

grown on about 800,000 acres in Iowa in 1924. Iowar has a little taller straw and is from two to three days later than Albion in maturity. It also is superior to Albion in yielding power, and therefore is the more promising of the two strains. It already is widely distributed in the more northern portion of the winter wheat belt, where it is replacing the Albion to some extent.

The Richland has been less popular because of its short straw and yellow kernels. Its distribution, therefore, has been limited. In yielding power Richland has been superior to Albion and about the equal of Iowar. It is primarily a special-purpose oat for growing on low, rich soils, where taller and later varieties frequently suffer loss by lodging. Richland also is resistant to stem rust of oats, which gives it exceptional value in years of severe rust epidemics, such as occurred in the northern portion of the winter-wheat belt in 1926.

Probably a Natural Hybrid

The Fulghum oat probably originated as a natural hybrid. It was developed in southeastern Georgia about 20 years ago as a plant selection from the Red Rustproof (Red Texas) variety, which until recently was the standard oat of the South. The Department of Agriculture had no part in its selection but was largely concerned in its testing and distribution. It is a so-called red oat, belonging to the same group (*Avena byzantina* C. Koch) as Red Rustproof and Burt. It is grown both as a winter and as a spring variety. However, in recent years it has become much more important as a spring-sown variety, especially in the transition zone between the southern winter-oat and northern spring-oat belts. It is now grown most extensively in Kansas, but is becoming more popular each succeeding year in southern Ohio, Missouri, Oklahoma, and northern Texas, where it is largely replacing Burt. Its early maturity and ability to produce satisfactory yields under conditions which usually are unfavorable to early varieties of common oats have made Fulghum the most important new variety of American oats.

A recent mass selection from Fulghum, known as Kanota, originating in Texas and developed in Kansas, has become popular, especially in Kansas. Of the 1,712,000 acres of oats grown in Kansas in 1925 over 700,000 acres were devoted to Kanota. It is believed that this area for 1926 may have exceeded 1,000,000 acres.

If these new oats on the average outyield the previously grown varieties by only 3 bushels to the acre, which is an extremely conservative estimate, the aggregate increase in production amounts to several million bushels. It is probable that the Iowa varieties were grown on at least 6,000,000 acres, and the Fulghum (Kanota) on 2,000,000 acres in 1926. This would mean an increase of 24,000,000 bushels of oats with very little additional cost to the farmer.

T. R. Stanton.

OIL Test for Oil-Bearing Seeds Found Industrial enterprises are constantly in search of methods of analysis which will shorten their laboratory work and give more efficient plant control. Typical of such rapid methods are those now in use by the steel chemist for determining carbon, phosphorus, etc., by the sugar chemist for determining the sugar content

of sirups and similar materials, and of the cereal chemist for denoting the percentage of moisture in cereal grains.

That a test of a similar character would be of great assistance to the vegetable-oil industry goes without question, as the buyer or seller of oil-bearing seeds would be in a position to know within a very short time the composition of the raw material. In addition, more efficient operation of the oil presses in the plant would take place, as by means of frequent check tests it would be known how much oil was being expressed from the raw material and adjustments could be made in the pressroom to insure uniform conditions.

In the past the greatest difficulties attending the development of a rapid test for determining the oil content of oil-bearing materials have been the lack of a suitable solvent to dissolve the oil, and remain fixed during the period of the test, as well as to the lack of simple laboratory apparatus to measure the oil after it has been removed from the raw material.

It has recently been found that a substance known as halowax (which, chemically speaking, is a monochloronaphthalene) is an ideal solvent. This compound has a very high boiling point so that it remains fixed during the test. Among other advantages it is nonhydroscopic, has a very small coefficient of expansion, and its cost is very small.

To make the test on most materials the following technic will give good results:

Grind 25 grams of material to be tested to a very fine state of subdivision. Place 2 grams of the material in a warm mortar and to it add 4 cubic centimeters of halowax. Stir vigorously for two minutes. Filter through a small filter paper. Let the oil cool to room temperature. Place a drop of oil on the prism of a 5-place water-jacketed refractometer and note the refractive index; also note the temperature. Make a temperature correction (for flaxseed 0.00045 points should be added to or subtracted from the refractive index reading if it is over or under 25° C.). Compare the corrected reading with the figures in a standard chart prepared as described below and determine the percentage of oil in the test sample. Wipe off the prism.

How Oil Content is Found

Making use of these general principles, and giving special attention to details, it has been found that the oil content of such substances as flaxseed, linseed meal, cottonseed, cottonseed meal, soy beans, cocoa beans, cocoa and cocoa products, peanuts, sesame seed, and mustard seed can be easily determined by noting the refractive index of a mixture of a definite quantity of halowax and the indefinite quantity of the vegetable oil under test, with the readings on a chart computed from definite quantities of halowax and known quantities of the same vegetable oil for which the test is being made.

The minimum equipment necessary for carrying out the test by the refractometer method is as follows:

Suitable grinding equipment, a refractometer capable of being read to the fifth decimal place, one pipette, one analytical balance, several mortars and pestles, small funnels, test tubes, folded filter paper, and absorbent cotton.

On the average it takes about 15 minutes to make a simple determination by the optical method. This time, of course, can be reduced if the tests are made in volume. This is in contrast to the 24

hours necessary to extract the linseed oil from flaxseed to the 16 hours necessary to extract cocoa butter from the cocoa bean, and to the 3 to 4 hours necessary for the extraction of cottonseed oil from cottonseed meal.

The cost of making the test is slight. After the initial expense of purchasing the equipment necessary for completing the test, the expense of reagents and other necessaries should not be over 2 cents per test.

D. A. Coleman.
H. C. Fellows.

OLIVES of the Barouni Variety Do Well In the Mediterranean countries where the olive has been cultivated for centuries it is in many areas one of the staple foods of the laboring classes. When playing this important rôle it is not the pickled green olive nor the stuffed green pickle commonly known on the American table that is used, but the ripened fruit cured in salt, which makes a most nutritious and apparently healthful product. The ripe olive is less well known in America and is very rarely used here as a dried, salted product. However, methods of processing and canning the ripe fruit have been developed which have resulted in a product greatly relished by many who have become familiar with it. At the present time an area of about 100 acres is planted to the Barouni variety in California.

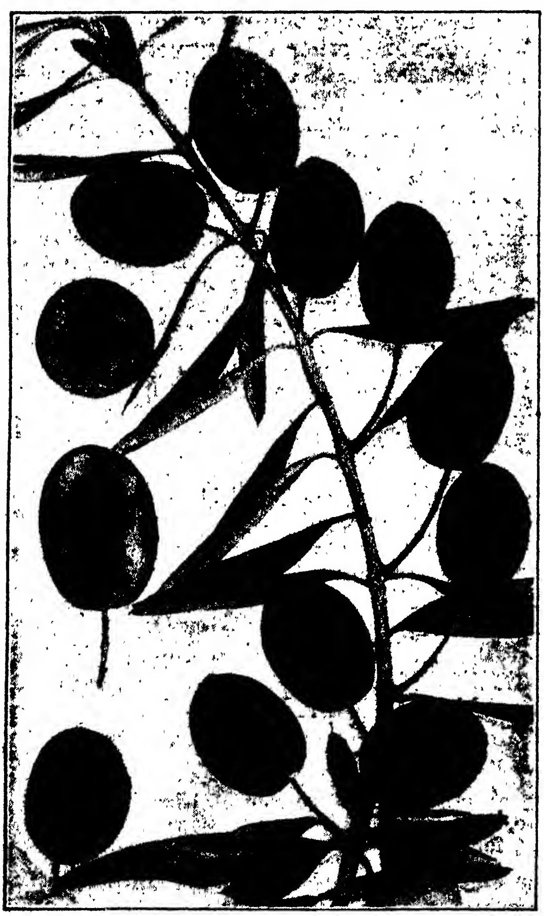

Fig. 163.—Fruits of the Barouni olive (S. P. I. No. 12569) grown at the plant introduction garden, Chico, Calif. Fruiting branch from nonirrigated tree

In the fall of 1904 one of the department's explorers traveling in northern Africa obtained from the premises of M. Robert, of Kalaa-Srira, near Susa, Tunis, a variety of olive known as Barouni, which has proved adapted to the olive-growing areas of the southwestern United States and is of special value as a ripe pickle olive. T. H. Kearney, who obtained

the variety, wrote at the time: "This is the largest olive in the country, and M. Robert's is about the only place where it can be secured." Nine small cuttings of this variety were forwarded to the department's plant introduction garden at Chico, Calif., and received there January 12, 1905.

Three Trees Grown

Three trees were grown from these cuttings and planted in the trial grounds. After a few years when they came into bearing the fruits were of such large size that they at once attracted special attention and indicated the probable value of the variety for commercial use. (Fig. 163.) However, it seems possible that the large-sized fruits might be due in part to the trees being young and pro-

FIG. 164.—Tree of the Barouni olive (S. P. I. No. 12569) at the plant introduction garden, Chico, Calif. It is about 20 feet high, with a spread of 27 feet

ducing but a light crop, and the production of subsequent years was necessary to establish its real merits. The tree of the Barouni is extremely vigorous and free growing. (Fig. 164.) It is rather precocious, bearing while quite young and maturing fruits of large size and excellent quality about 10 days ahead of the Mission variety. In size it is much larger than the Mission, comparing favorably in this respect with the Sevillano and Ascolano, which are used for the queen olives of our commercial trade. It has a good oil content, being similar to the Mission in this respect. The pit is comparatively free, but inclined to be a little large. It takes lye readily and is easily pickled. When utilized for commercial canning the Barouni should be picked from when it turns a straw yellow to when it has a purple tinge on the tip. When gathered at this stage the oil content varies from 12.75 to 16 per cent, and when allowed to mature fully on the tree it contains about 18 per cent of oil. One large

tree at the plant introduction garden when 11 years old produced 328 pounds of fruit, or at the rate of 10 tons of olives to the acre.

The Barouni can be propagated from cuttings or by grafting the same as other varieties of olive. When top working trees, bark grafting is quite commonly practiced.

ROLAND MCKEE.

ONION Curing to Prevent Decay While in Storage Mycelial neck rot (*Botrytis byssoidea* W.) is the most important storage decay of onions in the Middle West, where the crop is grown not only for table stock but also to a large degree for sets. The causal fungus overwinters in the soil or on refuse and subsists during the growing period of the crop primarily as a saprophyte upon old onion leaves or other dead organic material. When the plant is mature the organism enters chiefly through the neck of the bulb, whence it proceeds down the succulent scales causing a semiwatery decay. Thus the disease is in general initiated in the field during the process of harvesting or curing. In extreme cases as much as half of the bulb may have rotted before it is placed in storage, but in the main the infection is in the incipient stage at this time and may not be recognized macroscopically.

A study of this disease which has extended over a period of some 10 seasons in southern Wisconsin and northern Illinois has brought out some important facts which have a direct bearing upon control. These point to the conclusion that conditions which prevail during harvest and subsequent curing in a large measure determine the amount of decay which follows. Briefly, dry clear weather which tends to check the development of the fungus and at the same time hasten the drying of the neck tissues of the bulb tends to prevent infection while the reverse condition enhances infection. Thus, in certain years when favorable weather prevails at this critical time, the disease is negligible in storage, whereas in other seasons it may cause losses varying from 10 to 90 per cent.

Control Through Artificial Curing

Effective control has therefore been worked out through providing artificial means for sufficiently rapid curing of the bulbs, in spite of inclement weather. It has been found by experimentation that a surprisingly short treatment is sufficient to check the disease effectively. The procedure consists simply of forcing a current of warm dry air (first heated to 100° to 115° F. by drawing over a cast-iron stove or steam coils) through the onions in the slatted containers in which they are later stored. The period necessary will vary with the material at hand, but should be continued until the outer neck tissue is well dried. With onion sets this usually requires three to six hours. The bulbs may then be handled in the usual manner.

This control measure has been tested first in connection with white onion sets, where extreme susceptibility of the plant, the high value of the product, and the protracted storage period necessary all combine to warrant the extra cost involved. The results of 1923, 1924, and 1925 leave no doubt that the process is commercially practicable for this crop. The question of commercial adaptation to large

onions is still unsettled. The greater succulency of the neck tissue makes a much longer treatment necessary, and the additional cost is enhanced by the fact that initial value per bushel of the large onion crop is ordinarily appreciably less than that of onion sets.

J. C. WALKER.

ORANGE Freezing a Hazard in All U. S. Groves Freezing is one of the hazards in the production of oranges in the United States and none of the citrus regions of this country are so located geographically as to be entirely free from possibilities of low temperatures sufficiently prolonged as to seriously injure the trees and destroy the fruit. The fruit is much more easily injured than the matured wood or foliage of the trees and temperatures of 26° F., especially if they are of long duration, are almost certain to cause some injury to fruit and to any new growth or young leaves. Temperatures of 22° to 24°, long continued, are liable to cause injury to the trunks and limbs of most of the varieties of round oranges (*Citrus sinensis*) grown in California and Florida. This injury is manifested by splitting of the bark and wood of the trees, defoliation, killing back of the smaller limbs and, in extreme cases, the whole tree will be killed.

Frequently the trunks of young trees up to 3 or 4 years of age are wrapped with newspapers, cornstalks, or other materials, to protect them from freezing injury and these wrappings afford a considerable protection though the top and portion of the tree unprotected may be killed. A bearing tree can be produced more quickly and with less expense from the uninjured trunk of such a tree than by replanting. The best protection the orange growers have found is the supplying of artificial heat by burning of crude oil, coke, or such products in orchard heaters. In the California citrus region, which uses this method of frost protection extensively, about 1,500,000 orchard heaters are in use. In practice the heaters are usually lighted in orange groves at a temperature of 28° F. in order that all the heaters be lighted when the temperature reaches the danger point.

Evidences of Freezing Injury

The fruit may be injured at somewhat higher temperatures than the trees. The pulp of Valencia and navel oranges freezes at temperatures varying from 26.5° to 29° F., and the peel at somewhat lower temperatures. It is thus possible to freeze the pulp of an orange solid without noticeable injury to the peel, and oranges frozen under natural conditions usually exhibit no external evidences of freezing, even though the interior of the fruit may be a mass of partially dried, disorganized pulp. Freezing the pulp kills the juice vesicles so that the juice can escape and the interior of the fruit loses water. It becomes lighter in weight in proportion to its size, and it is thus possible to separate the sound fruit from the frosted by the difference in their specific gravity. Inasmuch as this test is not applicable commercially until several weeks after freezing and fruit which is severely injured by freezing is liable to lose moisture and deteriorate in transit, other methods of separating sound and frosted fruit have been developed. Perhaps the best index of frost

injury soon after freezing is the presence of crystals of the glucoside hesperidin in the septa between the segments. These crystals are very commonly found in frosted oranges. They form within two or three days after the fruit is frozen and can easily be distinguished. The presence of these crystals, or the discoloration and wrinkling of the tissues which sometimes accompanies freezing, afford a reliable test as to whether oranges have been injured so that they will deteriorate while being marketed.

It is sometimes said that oranges which have been frozen are unwholesome. Although they are not as attractive and may not be as palatable as sound oranges, the conclusion that they are actually injurious has little, if any, foundation.

LON A. HAWKINS.

OUTLOOK Reports—Their Preparation The growing feeling among farmers of need for complete and up-to-date economic information led the Department of Agriculture in 1923 to begin preparing and issuing statements on the outlook for the production and marketing of the principal agricultural commodities. These reports met with such a favorable reception that the work has been expanded and made a regular part of the program of the Bureau of Agricultural Economics. In the preparation of the reports this bureau has the assistance of other bureaus which have information that needs to be considered, and it collaborates with the extension service in the distribution of the reports.

In January of each year a comprehensive report is prepared covering the outlook for all the commodities on which sufficient information is available. During the summer of each year special reports on the outlook for hogs, sheep, and cattle are prepared and a report on the outlook for wheat production is issued each year just prior to the time of planting winter wheat. The general report on the agricultural outlook for 1926, issued in February, contains statements on 31 different commodities in addition to statements on the domestic and foreign demand situation, agricultural credit, and farm labor and equipment. This report covers a greater number of commodities than any of the reports that had been issued up to that time

The reports are designed to give to farmers prior to planting and breeding time information as to what the probable conditions will be when their products are ready for market. The statement on every commodity is based on all available information which will be of assistance to producers in planning their production programs and balancing their different lines of production so as to obtain the greatest returns and avoid as far as possible the overproduction or underproduction of any commodity.

Committee for Each Crop

For each of the agricultural products, a committee composed of those in the bureau who are most familiar with the production and marketing of the commodity assembles all available information on the present supply of the product and the demand for it, and on the trends of production and consumption. The committee, assisted by

representatives of other bureaus of the department interested in the production and marketing of the commodity in question, studies the information carefully and makes a tentative judgment as to the outlook for its production during the coming year. The commodity committee then presents its analysis of the situation and its judgment as to the outlook to a larger committee consisting of one member at least of each of the commodity committees, with the chief of the bureau as presiding officer.

This larger committee makes a critical review and appraisal of the findings of each commodity committee so that the statements when made public represent the consensus of opinion of the entire staff of the Bureau of Agricultural Economics and of the assisting members of other bureaus.

The preparation of the reports on cotton illustrates the many points that are considered and the varied sources of information on which the statements are based. Something like half our cotton is exported and careful attention must be given to the foreign demand. The foreign representatives of the department furnish special reports on the trend of conditions in the cotton industry in the countries where they are stationed.

Production from other countries supplies a considerable part of the world's cotton, and trends and conditions in foreign-producing countries must be studied by the committee.

When the prospective domestic demand is under consideration the many ways in which cotton is utilized are reviewed and the trends of general business activity and industrial conditions are appraised with regard to their probable effect on the demand for finished goods.

The supply of old cotton remaining unused when the new crop begins to move has a marked influence on the returns to growers, and the committee must estimate the probable carry-over of old cotton into the new crop year. The likelihood of damage by the boll weevil during the coming season is stated in so far as it can be foretold from the conditions during the previous season and the winter temperatures in the cotton belt. The committee also considers the probable costs of fertilizer, labor, machinery, feed for work stock, and poison for weevils.

Corn Conditions Complex

The outlook for the production of a commodity such as corn depends upon conditions almost entirely different from those which determine the outlook for cotton. Almost all our corn is consumed by livestock and the demand for corn is determined to a large extent by the number and kind of livestock to consume it. Here a judgment must be made as to the probable numbers of hogs, beef cattle, dairy cows, and other livestock that will be on hand when the corn crop not yet planted is matured and ready for consumption. Consideration must also be given to the fact that oats, barley, and other feed crops can be used as a partial substitute for corn. If corn should be scarce and high in price while the supplies of other feed crops are plentiful, livestock producers who must buy feed will be inclined to use less corn. Likewise in arriving at a sound judgment as to the outlook for livestock production, the prospective supply of feeds must be given considerable weight.

The statements necessarily present the national point of view and should be carefully considered by producers in every region to determine whether the general suggestions apply to a greater or lesser extent to their conditions.

In making his plans each farmer must bear in mind not only the probable conditions of the market for the different commodities he can produce, but also the conditions under which he is farming and the characteristics of his own farm. Both the requirements for production and the probable returns from the product should be considered in making decisions as to what to produce and how much to produce.

Since conditions vary so widely in different parts of the country, no blanket recommendation applicable to all the producers of a given commodity can be made in statements which present the national point of view. If the outlook for the production of some commodity is good it does not necessarily follow that all the producers of that commodity would profit by increasing their production. Neither does it follow that it would pay all the producers of a commodity to curtail their production when the outlook is for a lower demand or increased supplies from foreign countries. On account of this, many of the State colleges, through their experiment stations and extension services, have adopted the plan of preparing and issuing statements for farmers within the State, these statements being based in part upon the department's report and in part upon the local conditions that affect the possible lines of producion in which the farmers there may safely engage.

Useful to the Cooperatives

These reports have been of particularly great value to cooperative marketing associations and many of these associations have been very active in disseminating the reports among their farmer members. Frequent requests are received from these associations calling for more complete information or information on additional commodities.

The general outlook report issued in January is followed by a report on farmers' intentions to plant spring crops. This information gives producers an opportunity to make adjustments in their plants should there be a tendency to overplant or underplant particular crops. A report on intentions to plant fall crops is issued in August. Frequent surveys of breeding intentions with regard to specific classes of livestock are giving producers more information upon which to base their plans.

It is the intention of the Bureau of Agricultural Economics to expand this work so as to cover a larger number of commodities, to concentrate on the collection of economic information and the analysis of statistical data needed to furnish a better basis for subsequent reports, to obtain wide dissemination of the reports, and to assist the State colleges, cooperative organizations, and others in every way possible in preparing and disseminating localized statements that apply specifically to the farmers in different areas and regions.

When farmers in general come to base their production programs on a well-considered judgment as to the probable demand for their products when they are ready for sale and on the trends of produc-

tion in competing countries and in competing areas in this country, just as successful men in other businesses have been doing for years, farmers will have made marked progress in placing the agricultural industry on a parity with the other industries of the country.

H. R. TOLLEY.

PACKERS and Stockyards Act; How it is Administered The livestock and meat-packing industry taken as a whole is probably larger than any other single class of business in the United States.

The remarkable growth and extent of livestock production developed certain agencies which came to be recognized as essential to the marketing and processing operations. The livestock markets, or public stockyards, have become the central points through which a large part of the livestock produced in the United States passes on its journey from the farms and ranches to the consumers of the meat and other animal products.

In sending his livestock to these central markets to be sold the shipper usually consigns it to a commission man, or cooperative agency, who make it their business to represent the shipper in caring for and selling the livestock. The buying side of the stockyard markets consists of packer buyers, order buyers, and dealers.

For some years before the passage of the packers and stockyards act there was a more or less general feeling among livestock producers that conditions in the livestock markets were such that general supervisional authority over the many phases of this important business should be exercised by the Federal Government. Specific defects were known to exist and there was much controversy concerning the facts as to the operation of the market machinery by which the value of livestock was established. Leaders in the industry came to realize the need for intelligent and impartial supervision.

The Packers and Stockyards Act

In August, 1921, after extensive hearings, Congress passed a law known as the packers and stockyards act, which vests in the Secretary of Agriculture certain regulatory authority over the packers, stockyard owners, market agencies, and dealers. This authority extends to the business of packers done in interstate commerce, whether carried on at a public stockyard, or elsewhere. Such packers are prohibited from engaging in unfair, unjustly discriminatory, or deceptive practices; or from doing anything to restrain competition; or from establishing a monopoly.

On June 30, 1926, 77 stockyards were within the provisions of the act. A stockyard is defined as a place commonly known as a stockyard, and conducted for compensation or profit as a public market, consisting of pens and inclosures for holding, selling, or shipment of livestock in interstate commerce, containing an area of 20,000 square feet or more. When the Secretary finds that a stockyard meets all these requirements, it is posted as a public market, and due notice is given to the public, and to the stockyard owner. Ordinarily facilities furnished by a stockyard owner are holding, feeding, weighing, or otherwise handling livestock in commerce.

There were located at posted public stockyards on June 30, 1926, approximately 1,265 market agencies, whose services consist in the buying and selling of livestock on a commission basis, or furnishing other stockyard services. In addition there were approximately 4,455 dealers engaged in the business of buying or selling livestock, either on their own account or as the employees or agents of others. The market agencies and dealers are required to register with the Secretary, showing the place and character of the business conducted.

Fair Charges Required

The law provides that the regulations and practices of stockyard owners, market agencies, and dealers must be just, reasonable, and nondiscriminatory. It prohibits any practice which is unfair, unjustly discriminatory, or deceptive. Stockyard owners and market agencies are required to furnish reasonable service upon request. Schedules of rates and charges for these services must be filed with the Secretary, and kept open to the public. Changes in these schedules can be made only after proper notice to the Secretary and to the public. The rates and charges for services must be just, reasonable, and nondiscriminatory.

Prior to November, 1924, a regulation of the Secretary provided for a bond to be furnished by market agencies covering the proceeds of sale of livestock. Under an amendment to the packers and stockyards act, effective July 1, 1924, a new regulation was issued, effective November 1, 1924, which provided that all market agencies and dealers should furnish bond covering their obligations. Under this regulation it was necessary to have new bonds filed, or to require revision of old bonds.

The Secretary may hear complaints, as well as make inquiries of his own, with reference to rates or practices of any of the agencies subject to the terms of the act. He can determine and prescribe reasonable rates and practices, as well as prohibit the use of practices found by him to be in violation of the act, or rates which have been found by him to be unreasonable or discriminatory.

The Secretary can require special and annual reports from packers, stockyards, commission men, and dealers. Authority is given to investigate their books, records, and accounts, and to prescribe the manner in which such records should be kept, if it is found that they do not properly disclose all transactions involved in their business.

Certain rules and regulations have been promulgated by the Secretary. These rules generally cover the proper weighing, feeding, and handling of livestock, and the rendering of true and correct accounts to the shippers.

How Law is Administered

For the purpose of administering this law the Secretary has created an organization known as the Packers and Stockyards Administration. This is in charge of a chief administrative officer, who acts for the Secretary. A staff of administrative and technical assistants is located in Washington and in the field. Twenty offices are located at the more important public stockyards. Supervisors experienced in marketing supervise operations at these points, as well as at other small stockyards assigned to them. These men make numerous spe

cial reports of their activities. Through them it is possible to maintain a close contact with the persons and agencies whose business operations are affected by the act, and to adjust minor troubles quickly and informally.

The supervisors attend to complaints by shippers and others concerning service, such as cleanliness of pens, adequate water supply, prompt unloading and delivery, price and delivery of feed, physical condition of pens and alleys, and prompt delivery to and removal of livestock from scales. Practices of the trade, involving such things as the sale, price, or weight of livestock, complaints by and between market agencies, dealers, and stockyard companies, sale and disposition of crippled livestock and dead animals, operations of packer buyers and traders, likewise receive close attention.

Specifically supervisors have brought about improvement in facilities for receiving livestock, especially by motor truck, and removed unfair price discriminations between truck and rail livestock. The quality and weight of feed at a number of markets have been improved, and delays in weighing livestock overcome.

Other special investigations have been made into the practice of direct buying by packers, and the competitive relation of markets to learn whether any manipulation of supply exists for the purpose of controlling prices.

Accurate Weights and Scales

The administration is attempting to see that accurate weights are obtained for livestock. The purpose is to have suitable scales properly tested and maintained, and operated intelligently, to insure accuracy. This work is in charge of two weight supervisors skilled in scale mechanics. They work in cooperation with stockyard companies and with city, State, and commercial scale-testing agencies.

Audits of books and accounts of stockyard companies, market agencies, and dealers are made, with a full report to the Washington office. The auditor procures and furnishes information necessary to a complete understanding of the finances and practices of the business. When the audit of a market agency is made, if its financial condition is unsatisfactory, action is taken to safeguard the interests of the shippers and patrons of the market. This may involve the addition of capital, or separation of the shippers' money from the funds of the market agency, or both. Many commission firms with strong finances have adopted this plan of carrying the shippers' proceeds in a separate account.

The administration aims to carry out the spirit as well as the letter of the act fairly and impartially and to safeguard livestock marketing fully. It is felt that these efforts are building up a greater confidence in the central markets as a safe and satisfactory place in which to buy and sell livestock.

JOHN T. CAINE III.

PEACH Prices are Mainly Governed by Size of Crop The size of the peach crop determines in large measure what the average price to growers will be for the season. A less important factor, though an important one at times, is the general level of prices, which reflects business conditions and measures changes in the value of money.

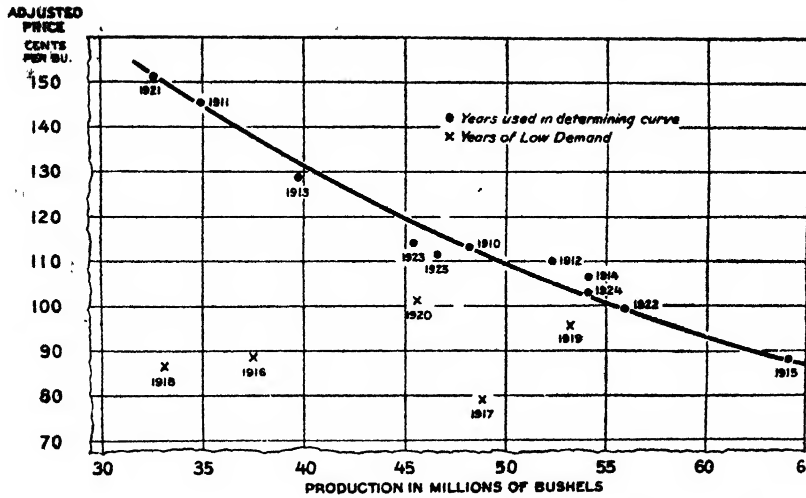

FIG. 165.—Relation of total peach production to United States farm price adjusted, 1910–1925

Figure 165 shows the nature of the relationship between the size of the peach crop and the average farm price of peaches, corrected for changes in the price level, as disclosed by a comparison of those two factors over a period of years. The larger the crop the lower the price has been, following up and down a rather definite curve, except during the years from 1916 to 1920, when the demand for peaches was low on account of the sugar shortage, car shortage, decline in real incomes of wage earners, and other factors.

This curve may be used to estimate what the average farm price for the season will be, when the size of the crop is known. What, for example, would be the probable average price if a 50,000,000 bushel peach crop were harvested? Follow the 50,000,000 line up on the chart to where it strikes the curve, then follow across to the

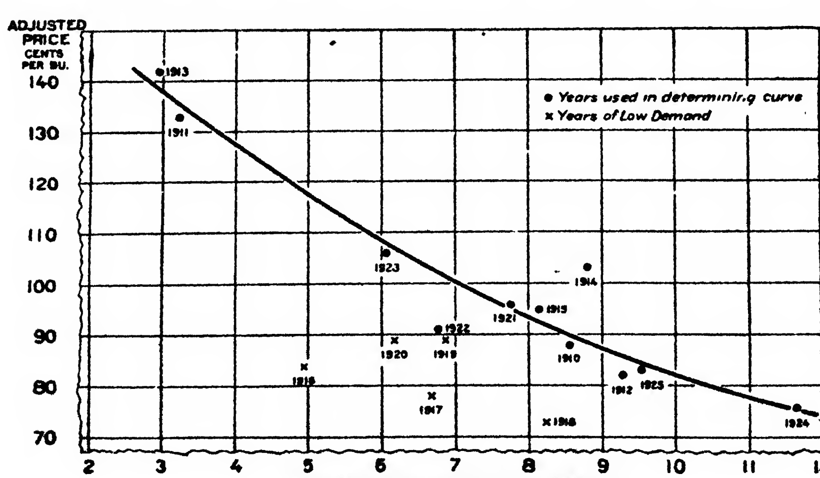

FIG. 166.—Relation of peach production in North Carolina, South Carolina, and Georgia to Georgia farm price adjusted, 1910–1925

price scale. The indicated price is $1.09, corrected for price level variations. Multiply this by a value for the all-commodities price level index of the Bureau of Labor statistics for September, which will give the desired estimate.

Such a comparison is more useful when localized to a single State. Georgia is the most important peach-producing State. In Figure 166 a comparison is given of the average July and August price in Georgia with the production of peaches in the Georgia region, including Georgia, North Carolina, and South Carolina. The same type of curve is observed as in the preceding chart, though 1914 and 1922 are somewhat off the line.

E. M. DAGGIT.

PEACH Survey of National Scope Shows Pitfalls Costly mistakes are frequently made in the development of peach orchards. From three to four years are required to bring a peach orchard into bearing and often conditions prevailing at the time of setting out the orchard are much different from those prevailing during the producing period. Improved methods of transportation and marketing have placed the peach industry on a national basis and although trees may be grown over the greater part of the United States, certain districts have outstanding advantages. Thus, it is important that new plantings be carefully planned.

During the fall of 1925 the Bureau of Agricultural Economics, in cooperation with various State and other agencies, undertook to collect and assemble information on the fresh-peach industry for the guidance of growers. Special attention was given to tendencies in production, to recent plantings of trees of various varieties, to problems of competition and distribution, to the extent to which peaches are marketed by rail, and to the cost of developing an orchard to bearing age.

Car-lot shipments of fresh peaches increased at the rate of about 2,000 cars annually. It is likely that shipments by auto trucks also increased materially but no figures are available to show the extent of increase. This increase in commercial shipments of peaches has come about, not because of an expansion in the number of trees all over the country, but because of extensive plantings and improved management of orchards in a number of the more favored peach-producing districts.

Prices Low in Some Districts

In some districts production has increased so rapidly and extensively that prices have declined greatly. In Georgia, North Carolina, and in others where the increase in production has been great, 1926 prices to growers were so low that many orchards were decidedly unprofitable. Recent plantings in many States have been so extensive that production may be expected to increase for some years to come, providing the orchards now planted are not badly neglected.

The figures on the ages of trees in 1925 indicate that much of any increase in production will come from Georgia, North Carolina, Michigan, Illinois, New Jersey, Tennessee, New York, and Arkansas.

Relative numbers of young and of old trees reported in the survey for 26 States show that in Georgia, the leading fresh peach producing State, 59 per cent of the trees were less than 6 years old in 1925, and 28 per cent had not then come into bearing. Other States of less commercial importance at present show much larger percentages of young trees.

Keener competition in the marketing of peaches from some States may be reasonably expected during the next few years. The cost of transportation and refrigeration set rather definite limits on the distance which peaches from a given district can be sent to market. As transportation costs increase with increased distance, it becomes more and more necessary to ship only fruit of high quality and attractive pack if the best returns are to be realized. This is particularly true in years when there is a large crop throughout the peach-producing districts. Thus, during years of low production in the East and South it becomes more possible for distant producing districts to ship to the larger markets and it is at such times that California increases the shipments of fresh peaches to the Central and Eastern States.

Distribution of Shipments

Normally Georgia supplies most of the territory east of the Mississippi River until the States farther north begin to send their crops to market. Texas shipments are confined mainly to the States west of the Mississippi River and to Illinois. North Carolina shipments go to the Atlantic seaboard region mainly. States lying directly north of Tennessee take most of her peaches. Arkansas peaches are marketed largely in the near-by States of Illinois, Iowa, and Missouri. Illinois peaches go to Chicago, St. Louis, and the smaller cities in the Middle West. The Middle Atlantic section, such as New Jersey and Eastern Shore of Maryland, depend upon New England, the Middle Atlantic States and Ohio for markets. Most of the Michigan crop is usually consumed in the Middle West. New York peaches go to the eastern cities, while Colorado and Utah peaches are marketed for the most part in the region lying east of them and extending to Illinois. Car-lot shipment implies relatively large movements and long distances to markets. The motor truck has, however, been effective in getting peaches to consumers who could not be reached otherwise.

According to the survey of 1925, nearly 50 per cent or more of the merchantable crop marketed in each of the States, West Virginia, Idaho, Alabama, New Jersey, Kentucky, Michigan, Pennsylvania, Indiana, and Ohio, was sold locally or hauled to market by truck or wagon. A very large percentage of the crop in some of these States goes to near-by towns and cities, usually by truck or wagon, although some shipments are made by express. In Ohio less than 15 per cent of the 1924 crop was marketed by rail. In 1924, on the other hand, Georgia sold locally or hauled to market by wagon or truck only 4 per cent of the peaches sold. The same conditions as in Georgia, although to a lesser extent, obtained in the other important peach States of the South, West, Midwest, and East.

Of the many varieties of peaches grown, only a few are of commercial importance. Good commercial peach trees must be hardy and produce regularly. The fruit must be of good shipping quality,

so that it can be sent to distant markets and remain in good condition. The Elberta is by far the most important variety east of the Rockies, as it meets these requirements. Other varieties of importance in certain districts are the Belle, Hiley, J. H. Hale, and Carman.

In some States a fairly large number of trees are found of little known varieties and of seedlings. In general, fruit from such trees may prejudice consumers against buying more peaches of the well-known standard varieties.

Care in Orchard Site Selection

Too much emphasis can not be placed upon the necessity of exercising care in the selection of the orchard site and in planting the orchard. With cost rates as in 1925, land could be bought and a peach orchard set out and cared for until 4 years of age for a sum amounting to $90 to $650 per acre, depending on the district selected. The cost of the land is the largest single item. In the commercial peach districts land is not a limiting factor in setting out an orchard, but a really good site may not be easily found. An enterprise like a peach orchard, that requires much time and money to develop, should be undertaken only after one is convinced that in due time the orchard will be profitable. Competition from near-by orchards and from competing districts during the bearing life of the orchard should be considered. An orchard that costs little, but bears fruit only occasionally, or bears fruit of poor quality, or even good fruit that must be sold on a glutted market, may be less profitable than one of higher cost, which produces good fruit regularly, for which there is ready sale.

M. R. COOPER.

PEANUTS: How They Reach the Consumer Few people who buy a small bag of roasted or salted peanuts from a street vender know of their origin or of the many processes the peanuts have passed through since leaving the ground. Peanuts are supposed to have originated in Brazil, but were taken in slave ships to Africa, Spain, and other countries at a very early date, and the types of peanuts that we know in America were probably developed in Spain and various parts of Africa.

The growth of the peanut industry in the United States was slow until the introduction about 45 years ago of labor-saving machinery for the various cleaning and shelling processes. The increase of the boll weevil in the cotton-growing States was responsible for a wave of peanut planting throughout the Southern States 10 or 12 years ago. During the last three or four years peanut production in this country has been less than during some of the war years, largely because of lessened returns and the preference of the southern farmer for planting cotton when reasonably profitable.

Peanuts require a long summer in which to mature properly, and so are not planted commercially north of a line running west from southern Virginia. Virginia-type peanuts are large-podded and seem to do best in the soils of southeastern Virginia, northeastern North Carolina, and central Tennessee. Elsewhere in the peanut

belt the small-podded Spanish is the preferred type, although many Runners, with pods of medium size, are planted in Alabama and Florida.

Left in Stack to Cure

After the peanut plants are dug or pulled from the ground, they are left in a stack or windrow to cure for a month. This lessens the tendency of the kernels to shrivel. Then the pods are picked from the vines by means of a mechanical picker or threshing machine and taken to the cleaning or shelling factory. Large storage houses at a number of the factory points provide a means for holding over peanuts from the time of harvest until they are needed later in the

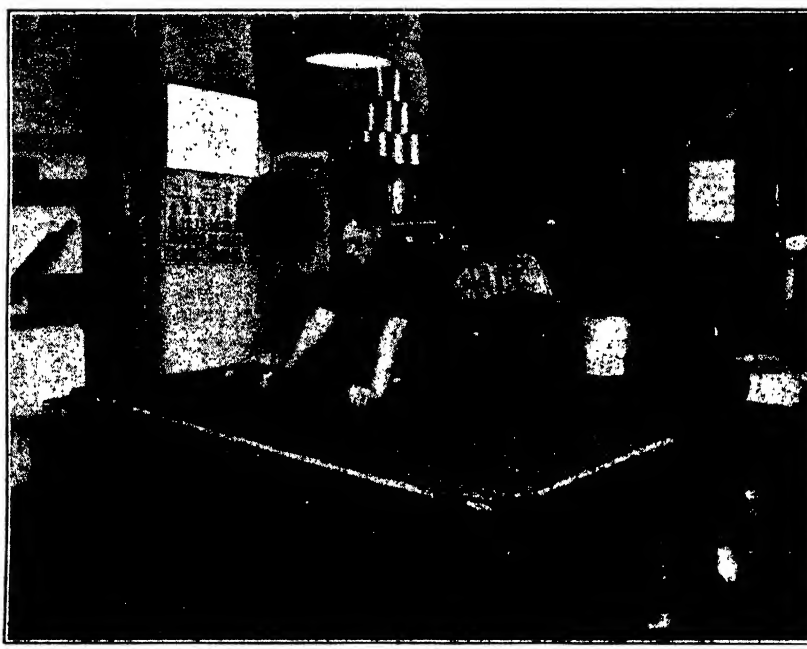

FIG. 167.—Cutting peanut candy into 5-cent bars. The past two or three years has seen a great increase in the volume of peanuts used in making peanut candy, and new kinds are frequently placed on the market

season. Millions of pounds of peanuts are also stored in the cleaning and shelling plants.

As the peanuts come from the farm the pods are often partially covered with dirt and accompanied by sticks, stones, and other foreign material. In consequence, cleaning operations are necessary as a preliminary step in making the peanuts ready for sale. This is especially true in the Virginia-North Carolina section, where the best of the large-podded nuts are sold in the shell for roasting. Before peanuts in the shell are considered ready for bagging they pass through a revolving reel, where excess sand and dirt drops out, through a machine for cutting off the little stems attached to the pods, past various fans to blow out chaff, light stems, and lightweight pods, through grading machines, and even a polishing drum, which contains a white, dustlike powder in which the pods tumble around

sufficiently to give them all a fairly uniform color. Finally, the pods pass along revolving, endless belts, along which workers are seated to remove discolored misshapen pods and any remaining foreign material.

Peanuts for Salting

Peanuts that are to be shelled and sold for salting, peanut butter, or peanut candy do not need such elaborate preparation, but usually pass through some recleaning machinery before being shelled. It is important that stones be removed, however, and a device using air currents and gravity is employed for this purpose with Spanish peanuts. The shelling is accomplished by forcing the pods between two cylinders, the inner one revolving, while the outer is stationary. To the revolving cylinder are attached two steel "beaters," which strike and crack the hulls of the nuts. Shelled Virginia-type peanuts are graded into two sizes, the larger of which is salted and the smaller worked into peanut butter and peanut candy. Peanuts which have been split in going through the machinery are used for cheaper grades of butter and candy.

Spanish and runner peanuts are always sold shelled. Shelled Spanish are so uniform in shape that they are well adapted to the penny vending machines, so numerous in some cities for the sale of salted peanuts, and enormous quantities are sold for this purpose. Spanish peanuts are also used to blend with Virginia-type nuts in making peanut butter, and a considerable and increasing volume is used in peanut candy. Runners are used primarily as a substitute for Virginias in peanut butter and peanut candy.

Shelled peanuts of the Virginia type which are to be salted have the thin outer skin removed before being placed in the vegetable oil in which they are cooked. With salted Spanish, however, the thin red skin is left on.

Peanuts in the shell are roasted from 15 minutes to an hour, depending upon the size of the roaster and the amount of heat used. Scorching is likely to result if the heating is too rapid. The machinery for roasting peanuts on a large scale is similar to that used for roasting coffee. In fact, coffee roasters are using their equipment increasingly for roasting peanuts as a side line.

HAROLD J. CLAY.

PECAN Trees Require Abundant Sunshine and Space Abundant sunshine and free space are no less essential to the parts of a pecan tree that are to produce their share of its crops than is liberal plant food in available form and space to the roots. This fact did not receive the attention it demanded from most of the pioneers in the industry who were the first either to top-work the wild groves of the Southwest or to plant the first orchards farther east.

The pecan tree is the largest growing nut tree under orchard cultivation. The average spread of ordinarily big trees, 50 or more years of age, standing in the open and in locations favorable to their growth is probably from 100 to 125 feet, although maximum trees of

materially greater range are not unusual. This is fully three or four times the usual size of normally big apple trees and from four to six times that of the peach, yet many of the first pecan developments were spaced at from 15 to 30 feet, which represented the usual planting distance of these species at that time.

The planting distance between pecan trees has increased an average of approximately 1 foot a year since 1900. It was then about 35 feet. At present, few orchard trees are being set less than 60 feet each way. The end is apparently not yet in sight as 100 feet is being speculated upon and occasional orchards are being so spaced.

Evidence of greatly reduced bearing surface in the lower parts of the trees because of the shading and subsequent death of, first the fruit spurs and then the entire branches, is to be seen in nearly every

FIG. 168.—Pecan branches about to come together in the middle of the rows. With varieties known to be intolerant of shade, the alternate trees should be removed promptly when this condition develops. These are Frotscher trees, standing 50 feet apart each way. The photograph was taken 14 years after planting

orchard of the South that has made normally rapid growth and has been of adult bearing age for more than five years. The branches of many of these earlier plantings form a canopy from 20 to 50 feet high from one row to another, below which there are few or no bearing branches except on the outside of the end rows.

Only One Cure for Crowding

There is but one remedy to apply, once crowding has begun; namely, to eliminate some of the trees. This costs money and takes courage, especially as not infrequently crowding has begun before the trees have begun to bear profitably.

Regardless of whether or not the trees are destined to become profitable in later years with thinning, they are most unlikely to do so without it, once serious crowding has begun. As to the exact time

at which they should be thinned, much will depend upon the variety, original spacing distance, rate at which they have grown, and various other factors. Some varieties are less promptly affected by shade than others, either because of greater ability to endure shade or because of an erect habit of growth and the causing of less shade, or both. The Stuart affords a good illustration of the upright-growing type, very resistant to shade, and requiring a minimum of actual space during a long part of its early bearing period, and the Frotscher, an equally good illustration of a variety that is both broadly spreading and intolerant of shade.

The extent to which the branches of the trees in an orchard may come together at the middles and serious shading begin is shown in Figure 168 photographed near the end of the fourteenth growing season after the trees had originally been set out 50 feet each way.

FIG. 169.—A Frotscher pecan tree at the end of a crowded row, showing the extent to which the lower branches have dropped on the inner side as a result of shading, and been retained in full bearing on the sunny side

The damaging results of shading were much in evidence at harvest time of the year in which this picture was taken. The leaves on the lower branches matured and dropped prematurely and the nuts from the same branches were so poorly filled that they seriously lowered the average condition of the entire crop.

Alternate Trees Removed

One year later the branches crossed the middles of the tree rows to such extent that the vision was entirely obstructed and great spaces became vacant about the lower parts of the trees where recently there had been heavy-bearing branches. It was then so obvious that the process of self-pruning was likely to continue indefinitely unless prompt action was taken that the alternate trees in the part of the

orchard where they were the largest and incidentally the best bearers, were removed.

None of the trees in the outside rows were disturbed, as these had one side on which they were free to develop. The lower branches on the inner sides of these trees continued to drop off as shown in Figure 169, by which it may also be seen that those on the outer side were still being retained seven years later when the picture was taken.

Following the removal of the alternate trees, not only did the lower limbs cease to die but those not too far gone put out new leaves and spurs and began again to bear crops. The filling quality of the nuts was restored to normal and the yields per acre continued to show

FIG. 170.—Diagonal view showing the amount of space between the rows in a 22-year old Frotscher pecan orchard, originally set 50 feet each way, seven years after the alternate trees had been removed

a satisfactory increase. The ends of the lower limbs began to sag with weight of nuts and to again occupy the space which had been vacant.

A typical view between the trees, taken seven years after the thinning process took place, on the diagonal, which had become the order of alignment with the thinning process, is shown in Figure 170. This shows that it will probably be only a few years before the branches will so overlap that thinning will again be advisable.

C. A. Reed.

PERQUISITES Hold Good Farm Help The majority of farm operators give their men hired for the season various privileges on the farm, or allowances of farm products in addition to their wages. Some of these perquisites have been customary for many years and are given and taken as a matter of course. Others are so new that frequently the

farm operator feels they have been forced upon him—that he had to give in or lose a good farm hand.

Perquisites are a more important factor in the wages of farm labor than has generally been realized, but many farmers have given these matters little thought. They are an important means of attracting to and holding good hands on the farms.

For many years rates of farm wages have been commonly quoted with or without board, but with no reference to the additional value of perquisites given. Farm wages seem low compared to wages paid nonagricultural laborers. What are the perquisites given noncasual or steady farm hands? What are they really worth to these men? How much do they make up to them for the low cash farm wages? How much does it cost farmers to give these perquisites? How are they helpful in getting and keeping good farm hands? A recent investigation by the Department of Agriculture has partly answered some of these questions.

Perquisites Are General

The perquisites considered here are those of month hands, hired in most cases for the crop season or a year. Comparatively few farmers who reported give these men cash wages without perquisites of some kind. Those most commonly given are board, lodging, house rent, fuel, milk, meat, vegetables, fruit; a chance to keep livestock such as poultry, pigs, a cow, or a horse or mule; feed or pasture for the livestock kept; garden, and use of employer's horses or mules.

Practically all single men reported on receive board. The other perquisites most commonly given them are use of horses or mules and vehicles, and garage space for their own motor vehicles.

Few married men are given board, but the majority receive the use of a house or cabin and some fuel. In addition, the variety of perquisites given them is much greater than for single men. Those most commonly given besides house or cabin, fuel (usually wood), are milk, meat (usually pork or its products), vegetables and fruits (especially potatoes and apples); the privilege of keeping poultry, pigs, cow, horse, or mule; allowance of feed or pasture for the livestock kept; garden space; use of horse or mule and farm tools and vehicles; garage space for the man's own motor vehicle.

The average money wage of unmarried farm hands reported upon in this study was $42, and of married men, $50 per month. The total farm value of the perquisites given each class of men was nearly the same; for the former, $30, for the latter, $31 per month.

Board For the Unmarried Men

Board and lodging are given nearly all unmarried men. They are the perquisites most costly to the farm operators who give them. Board alone averaged over twice the value of any other perquisite reported. The separate values of the more numerous perquisites given married men averaged lower; for instance, house rent, when given, $9; wood or coal, $4; dairy and poultry products, $10; meats, $5; feed for livestock the man was allowed to keep, $6. Few men got more than a few of these perquisites. The usual kinds vary considerably from one part of the country to another.

In this study the farmers were asked to value perquisites at their actual value on the farm, but it is believed that frequently the cost to farm operators of giving perquisites is very little compared to their value to the hired hands. Wood furnished may be simply dead stuff the man cuts himself; chickens or pig or cow may pick up much of their feed from what would otherwise go to waste or be idle fields. Vegetables and fruit given may be unmarketable because of blemishes or small size, but fit for home use. The farmer is seldom put to inconvenience by allowing the hired hand garden or garage space, or put to much expense for his man's use of farm tools, horses, and vehicles.

If the hired man had to pay average city prices for the perquisites given him on the farm, the cost to him would often be more than twice their farm values. For example, the average monthly rental for a city home of five rooms is about $22 per month; fuel and light add $7 more. In the city the average family buys barely a quart of milk a day at a cost of over $4 per month; the hired farm hands reported on got over 3 quarts a day, valued at over $8 per month. The city family pays $2 a bushel for potatoes, and buys less than a bushel a month; the farm hand was given almost 2 bushels, worth nearly $3. In cities there is little chance to have a garden, to keep poultry or other livestock, or to get meat free and other things many farm hands receive. The average married farm hand's perquisites, worth about $30 per month on the farm, would probably cost him nearly twice as much if paid for in the city. Besides, he gets other perquisites for which it is hard to estimate costs and values, yet which would be missed by a family accustomed to them.

Many farmers needing a good class of steady hired help should consider giving additional perquisites possible on their farms, especially those which cost little but mean much to the laborers. Working men not on farms usually hear little of farm work except that wages are low; they would more often consider it as an occupation if they knew what perquisites and consequent savings in expenses were offered in addition to wages. Giving perquisites is an important means of attracting and holding good farm hands.

J. C. Folsom.

PHOSPHATE Fertilizer Deposits of U. S. Ample

Phosphate comprises more than two-thirds of the 7,000,000 tons of fertilizer used in the United States annually. From this we may assume that phosphate is our most important fertilizer material. Its importance in relation to agriculture and the domestic fertilizer industry is emphasized by the fact that the United States possesses the largest known deposits of phosphate rock, making us entirely independent of foreign sources.

Phosphate fertilizers may be divided into two classes—(1) those in which the phosphorus is readily soluble in water, and (2) those in which the phosphorus is practically insoluble in water, but is in such a form that it can be slowly utilized by plants. Basic slag, bone meal, bone ash, bird guano, precipitated phosphate, and finely ground raw rock phosphate belong to the second class. Basic slag is an important phosphate fertilizer in Europe, but its use in this country is limited because of our very small domestic production.

Bone meal, bone ash, bird guano, and precipitated phosphate are valuable fertilizers, but they are produced only in comparatively small quantities. Under certain conditions of soil and climate good results have been obtained with finely ground, raw rock phosphate; for example, when it is used on an acid soil or when it is applied with farmyard manure or green manure.

Our most important phosphate fertilizer is acid phosphate, or superphosphate. It is manufactured by treating phosphate rock with sulphuric acid, and it contains from 16 to 20 per cent of phosphoric acid (P_2O_5), practically all the phosphorus of which is soluble in water and can be readily utilized by plants. Acid phosphate also contains a large percentage of gypsum, which is formed during the manufacturing process. Although gypsum has some value for certain types of plants and soils, no direct charge is made for that which is present in acid phosphate. However, its presence increases the cost of the fertilizer to the farmer, since on it the farmer must pay as much freight as on an equal quantity of the real fertilizer.

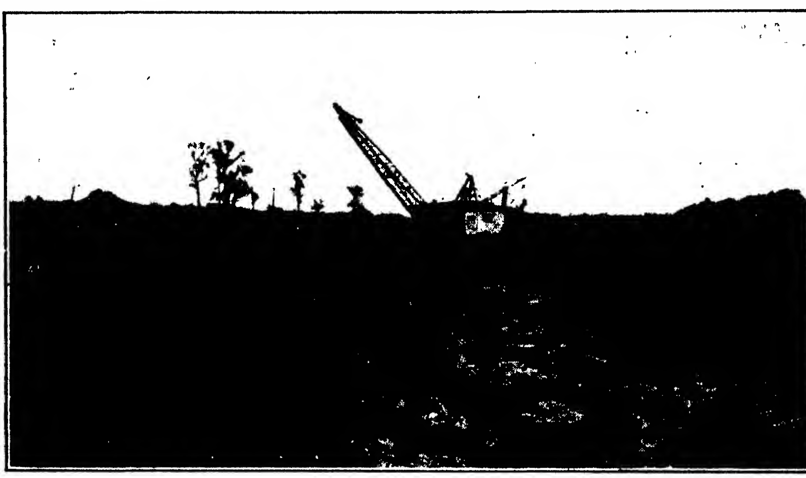

FIG. 171.—Mining Tennessee brown phosphate rock, Mountpleasant, Tenn.

Double superphosphate, a material similar to acid phosphate, is produced in limited quantities in this country. It contains from 40 to 45 per cent of water-soluble phosphoric acid (P_2O_5) and practically no gypsum. A relatively high-grade phosphate rock is now used in the manufacture of both acid phosphate and double superphosphate.

Much Phosphate Lost

Approximately 4,000,000 tons of phosphate are lost or wasted annually during the process of treating the phosphate rock as mined, to obtain the high-grade material required for the manufacture of acid phosphate. There are also enormous deposits which can not be utilized for the manufacture of acid phosphate because they contain undesirable impurities or comparatively little phosphate. Recognizing the importance of prolonging the life of our phosphate resources, the Government has done considerable work in the last few years on methods for utilizing these low-grade and waste ma-

terials. The production of liquid phosphoric acid seems to be the most desirable method, and several processes have been worked out for its manufacture from both high-grade and low-grade phosphate rock. Liquid phosphoric acid can be combined with ammonia or potash to form soluble, highly concentrated, solid fertilizers which can be handled and transported at a minimum cost. Although these concentrated materials are not produced in any appreciable quantity at the present time, it seems very likely that they will constitute a large portion of the phosphate fertilizer used in the future.

K. D. Jacob.

Photographs Tell Story of Agriculture

The coming of the motion picture and the much more general use of photographs in educational publications, magazines, and newspapers in the last 20 years have made the present generation in the United States both in the city and country picture minded. Pictures telling a definite story or lesson relating

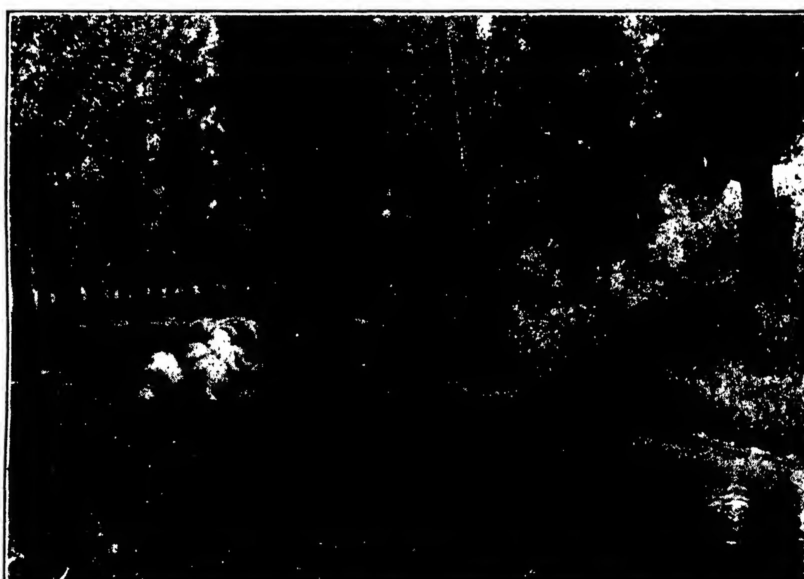

Fig. 172.—This contrast picture tells the story of a ditch-bank-pasturing demonstration. On the right we see the unpastured bank and at the left the bank that has been pastured

to the farm and farm home have found important uses in extension education. They are used to help tell effectively the story of successful demonstrations in efficient farming and home-making practice. Such photographs make clearer and more readable bulletins, circulars, leaflets, and posters sent out by the extension divisions of the State agricultural colleges and the United States Department of Agriculture. They illustrate stories about successful extension demonstrations appearing in newspapers, magazines, and farm journals. As lantern slides and in charts and posters extension workers use them to show more clearly the things talked about. In extension

exhibits they show steps in demonstration and better ways of doing certain things.

A series of well-taken photographs showing the progress of an extension demonstration gives to the many who can not watch from week to week the demonstration itself a clear idea of how the demonstration is carried out and what are its results. Photographs make it possible for people to see at any season of the year what a demonstration is like, whether it is in growing a crop, feeding animals, making a dress, or rearranging a kitchen. The photograph has proven particularly valuable in showing before and after views illustrating changes, due to improvements or treatment. For example, the beautifying of the grounds around a house or improved feeding of a farm animal. Photographs of contrasting kinds of materials,

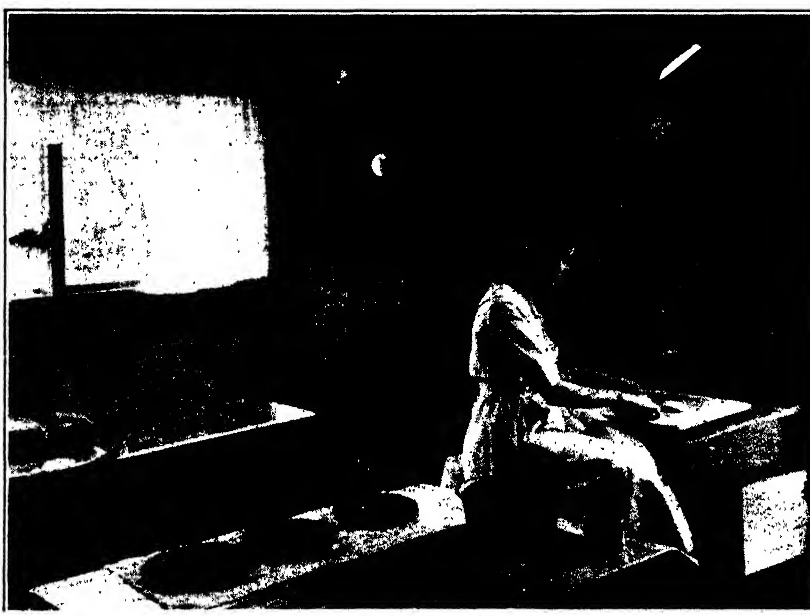

FIG. 173.—Farm woman in her improved kitchen. This picture answers the requirements for natural surroundings, costume, and action

methods of handling equipment, or types of animals are often helpful in driving home an extension lesson. It is found that extension activities such as tours, team demonstrations, contests, camps, and short courses are much better understood by the reader or listener when good photographs of them are used.

Interest Should Be Concentrated

Photographs used in extension education to be effective must be good photographically. They must show clearly the definite step in a process described. The eye should go directly to one center of interest in the picture and only one if the picture is properly taken. A photograph that has several centers of interest in it does not meet the requirement of a good teaching picture which is to tell clearly one definite thing. In photographs in which people are shown, the

surroundings, costumes, and action of the people should be appropriate and natural. (Fig. 173.) If the people in a picture have the appearance of doing something they are not used to or if they are dressed in clothes or are in surroundings not suited to what they are doing, it has been found better not to use the picture since it is not likely to be convincing.

The supply of photographs suited for use in extension education is growing steadily. The extension service of the United States Department of Agriculture has a reference file of photographs on farm and home subjects for the use of extension workers and cooperators of over 25,000 photographs. Its loan collection of 60,000 lantern slides comprises about 150 series of interest to farm audiences. Each bureau of the department, also, has its own specialized collection of photographs illustrating the results of its investigations in the teaching use of which the extension service cooperates. Supplementing these sources of photographs many of the State agricultural colleges maintain large collections of photographs and lantern slides, touching every phase of extension education relating to the farm and in the farm home.

REUBEN BRIGHAM.

PIG Surveys and Market Stabilization The pig-survey reports issued by the department twice a year, as of June 1 and December 1, show the size of the spring and fall pig crops of each year as a percentage of the similar crop of the preceding year, and the number of sows bred to farrow the following season (fall or spring) as a percentage of the number actually farrowed the similar season of the preceding year. The survey of June 1, 1926, showed the size of the 1926 spring pig crop as a percentage of the spring crop of 1925, and the number of sows bred to farrow in the fall of 1926 as a percentage of the number actually farrowed in the fall of 1925.

Thus these reports have the dual character of "current production" and "intention to produce" reports. As such they furnish information from which can be estimated the probable seasonal market supplies of hogs. This is of great value to producers in making feeding and marketing plans. Indications of future production as shown by breeding intentions are useful to individual producers in deciding their own breeding programs.

The name "survey" instead of "estimate" is given to these reports because they are not estimates in the sense that crop reports are estimates or forecasts. The latter as issued by the department represent the judgment of the crop-reporting board after a study of all available data bearing on the respective items. The pig-survey reports give the results as computed from a tabulation of the returns made by producers covering their own operations. No attempt is made to modify these results on the basis of information received from other sources.

Post Office Department Assists

The procuring of the basic material for these surveys is a joint activity of the Post Office Department and of the Department of Agriculture. The survey cards are prepared by the Department

of Agriculture and distributed by the rural and star route mail carriers of the post office. To the postmasters of each post office, from which a rural or star route operates, a supply of cards is sent sufficient to furnish 15 to each carrier. These cards are given the carriers by the postmasters, with instructions as to the manner in which they shall be distributed. These instructions ask that the farms from which reports are obtained be as nearly as possible representative of all farms along each carrier's route, including large and small, owned and rented, good and poor. If possible, the carrier interviews the different farmers and fills out the cards himself; otherwise he leaves the cards in the mail box with requests that they be filled out and returned to him the next day. The carriers turn over the filled-out cards to the postmaster, who mails them direct to the Department of Agriculture.

Advantages of the Plan

Among the advantages of this method of obtaining information are the following:

The returns furnish a more truly random sample than returns sent in from a selected list or returns from a list selected at random. There is danger, however, of the returns becoming selective if the rural carriers tend to distribute the cards only to the farmers who fill them out most readily.

The returns are much larger and better distributed than returns from mailed questionnaires. Between one-third and one-half of the cards sent out are returned.

The cost of procuring the returns and distributing the results is much less than with mailed questionnaires.

Farmers Gain Contact with Department

Many farmers in this way are brought into contact with the crop and livestock reporting activities of the department who otherwise would be largely ignorant of them; many are interested in the pig-survey results who might not otherwise learn of them. This tends to increase the possibilities of these reports actually influencing the decisions of enough farmers to make them a real factor in production changes.

The number of cards returned is much larger than actually needed to give a stable sample. To expedite the report only the estimated minimum number are used. For the leading hog States these are distributed by counties on the basis of 1 card to each 30 farms reported by the census as raising hogs. This gives about a 3 per cent sample.

These reports are of greatest value to producers since they furnish information as to seasonal hog production some months in advance of the time when the marketing of this seasonal production takes place. This makes it possible for producers to adjust their feeding plans to this probable production. The reports also give marketing agencies, extension organizations, and farm papers dependable information upon which to advise hog producers as to market supplies, price trends, and marketing policies.

Such information tends to reduce the speculative factors in the packing business. In the past very little information was available

as to hog supplies in advance of the winter packing season during which surplus storage stocks are accumulated. The pig-survey reports make possible advance estimates of total crop-year slaughter and the seasonal distribution of such slaughter. Financial arrangements, plant organization, surplus storage policies, and marketing programs can now be more definitely worked out in advance than was formerly possible.

In short, these reports furnish a basis for better adjusted production, more intelligent feeding, and more orderly market distribution of hogs and less speculative packing and better organized merchandising of the products.

C. L. Harlan.

PINK Bollworm and Measures to Exclude It

The pink bollworm is now recognized as one of the most injurious cotton pests of the world, probably outrivaling the cotton boll weevil which has been estimated to cause, in this country, an annual loss in excess of $200,000,000. At present, the pink bollworm is established in all of the commercially important cotton-producing countries and in a number of them is responsible for losses ranging from 30 to 50 per cent of the crop. The cultivation of cotton in Hawaii has been practically abandoned, owing to the ravages of this pest, where it has been found to infest from 50 to 99 per cent of the bolls in the field. It affects the production of cotton in several ways; namely, reduces the yield, lowers the quality of products, and affects the oil content of the seed.

Briefly, the general color of the larval or worm stage is pink, from which the common name is derived. Eggs are deposited by the adult, which resembles somewhat in color the common clothes moth of this country and has a wing expanse of from three-fifths to four fifths of an inch from tip to tip, on various parts of the plant, about half being on the green bolls. These eggs hatch in about 10 days, and the small worms shortly thereafter penetrate into the interior of the cotton bolls or squares and later enter the seed. The fact that the larvae or worms may live in the seed for two years makes it possible for the insect to be transported to the most remote quarters of the earth.

Preventive Action Taken Early

The department early realized the necessity for taking drastic steps to protect the cotton industry of this country from invasion by this pest, and in 1913 prohibited, under the plant quarantine act, the entry of cottonseed from all foreign countries and localities, with the exception of the Imperial Valley of the State of Lower California, Mexico, where the pink bollworm is not known to occur. Subsequently, a similar prohibition was placed on the entry of cottonseed from Porto Rico and Hawaii. Early in 1920, it was discovered that shelled corn shipped from Mexico was arriving at American ports of entry, fouled with cottonseed which may contain living pink bollworms; and to meet this situation, the entry of corn from that Republic was conditioned upon its being ground or subjected to a temperature of at least 200° F. for a period of not less than five minutes.

Investigations to determine the various ways in which the pink bollworm may be introduced, disclosed that bales of cotton may contain varying quantities of seed, and also that the wrappings used on cotton, cotton waste, etc., often have adhering to them cottonseed, thus leaving open an avenue for the entrance of the pink bollworm. Inasmuch as this insect can live for a long period within seed, the entry of bales of cotton and wrappings used to cover foreign cotton presented a serious risk; and following experiments conducted by the department to determine a method of safeguarding the entry of such products, an order was issued March 10, 1916, requiring that all foreign cotton be given vacuum fumigation with hydrocyanic-acid gas at the port of entry. (Fig. 174.) Since that date, upwards of 3,500,000 bales of cotton have been so treated, as well as numerous

FIG. 174.—Vacuum cotton fumigation plant in Boston, Mass. Each cylinder will accommodate from 145 to 300 bales of cotton, dependent upon the size of the bales

shipments of cotton waste and wrappings used to cover foreign cotton. Owing to the risk which accompanies the entry of cottonseed cake, meal, and oil, on June 23, 1917, an order was issued restricting the entry of the first two products from all foreign countries, and on the same date a similar order regulating the entry of cottonseed oil from Mexico was promulgated.

Pink Bollworm in Mexico

The discovery of the pink bollworm in cotton fields in Mexico and the finding of this insect in cottonseed in freight cars returning to the border presented a new problem. Inspectors were stationed at the more important ports of entry, and subsequently car-fumigation houses were erected for the purpose of fumigating all cars which

might be the means of introducing the pink bollworm. These houses, six in number, vary in size from 6 to 20 car capacity. (Fig. 175.) Since 1918 inspectors of the Federal Horticultural Board have examined, in Mexico, over 242,000 freight cars; and of this number in excess of 122,000 were fumigated in the car houses referred to above. The risk, however, was not confined to freight cars, since cottonseed was frequently taken in passengers' baggage, particularly in that of Mexican laborers entering this country for a brief period to assist in the picking of American cotton. Living pink bollworms were, on a number of occasions, found in cottonseed mixed with cotton lint used

FIG. 175—Federal car-fumigation house at Laredo, Tex. This house will accommodate 20 freight cars and is believed to be the largest house in the world used exclusively for fumigation purposes

in pillows and blankets. In an effort to prevent the entry of the pink bollworm through this source, inspectors of the Federal Horticultural Board cooperate with the inspectors of the customs service in the examination of passengers' baggage arriving either by train, motor car, or in the possession of pedestrians, and all material containing cottonseed is confiscated and destroyed. Similarly, baggage of passengers arriving at maritime ports of entry is examined for cottonseed and other prohibited plant products. In cooperation with the customs service and post-office officials, all foreign parcel-post packages are inspected for contraband plant material.

E. R. SASSCER.

PLUMBING on Farms Inadequate American farmers have more and better plumbing than the farmers of any other nation; yet 9 out of 10 American farms still have the old, backbreaking methods of supplying water. An unusual example, but valuable as an illustration, was noted recently on a farm in an eastern State. A woman was found to be walking 440 miles a year—as far as from Chicago to Omaha—carrying water from a spring uphill to her home, and in so doing was expending sufficient energy to plow 19 acres of land. The rough, steep, deeply-worn pathway bore evidence of needless toil and sacrifice. At least $50 worth of

time was being thrown away yearly, which if saved would have paid for a modern, pressure water system in three years. Figure 176 affords some idea of what it means to have running water about the farm buildings.

A sink is the most useful plumbing fixture in a farm home, and yet it is estimated that half of the farms of the country have none. There is little real excuse for not having a sink when a fairly good one can be purchased for as low as $3. Where the commercial article must wait, a little time and ingenuity often provides a simple home-made sink, which though crude is much better than none and has proved a boon in many a home. Sinks should be located to insure light, air, and fewest steps. The waste pipe should be accessible for easy cleaning. Every housewife should determine by experiment what height of sink will give her an easy, erect working position, bending at the hips rather than stooping from the shoulders. For a woman of average stature, a favorable height to the top of the sink rim is yard-stick length or 36 inches. Figure 177 is a one-piece,

FIG. 176.—The convenience of running water about the farm buildings

enameled-iron apron sink with two drain boards and combination swinging spout faucet. The setting gives plenty of light and air and utilizes the space beneath and above the sink.

Indoor Laundry Desirable

In good weather many people do the laundry work out of doors because it is more comfortable, and others do it in the kitchen. It is much better to have a separate room, equipped for laundry work, that can be used summer and winter. A rear room close to the

FIG. 177.—A sink set at the right height. This setting saves space and lightens work

FIG. 178.—A typical farm-plumbing installation, showing part of the kitchen and bathroom

kitchen is desirable; a basement room is often utilized but is generally less convenient.

Considering the great benefits of a bathroom with the usual three plumbing fixtures—washstand, bathtub, and water closet—it is surprising how few farms are so provided. A farm-home survey in 1914–1916 by the United States Public Health Service in 14 average counties in 13 States shows there were only 808 water closets in 51,853 homes, and 16,733 of the homes were without a privy. Expressed in simpler form, only 1 home out of 64 had a water closet, and 1 home out of 3 had no privy.

A bathroom need not be large. It is not necessary that the fixtures be either large or costly or that they all be installed at one time. A small spare chamber or closet, a part of the old, little-used parlor or sitting room can often be made into a very useful, inviting bathroom and the fixtures may be added one by one. A typical farm-plumbing installation, with a glimpse of the bathroom, is shown in Figure 178.

Bulletins on Plumbing

The farmer is unlikely to regret the day he took up the study of his plumbing problem. Few investments will yield surer, larger returns. To those interested the department will gladly send free a copy of Farmers' Bulletin No. 1426, "Farm Plumbing," and Farmers' Bulletin No. 1460, "Simple Plumbing Repairs." With the aid of such bulletins simple fixtures can be installed in keeping with the surroundings and the pocketbook. And it is well to remember that plumbing may be simple and yet be sanitary, that it may be sanitary and yet not unduly expensive, that it may be inexpensive yet durable—lifetime plumbing—provided it has proper usage and care. Those contemplating such installations, however, should familiarize themselves with local and State plumbing regulations or laws. The services of a good, reliable plumber are recommended as being most likely to obtain a lawful, dependable job.

George M. Warren.

POISONING of Livestock by Plants

Poisonous plants have long been recognized as the cause of serious losses of livestock to American farmers and stockmen. That many plants are poisonous has been known, of course, ever since the earliest historical times. These plants have been studied in detail, and there has resulted a great body of literature, published largely in European countries, especially in Germany and England. The plants in ancient times were studied with reference to their possible use in medicine, and were used also in the punishment of criminals, and sometimes in malicious poisoning. The recorded cases of the poisoning of domestic animals by plants in the eastern continents were, however, very few compared with the losses which have been suffered by American farmers and stockmen. That all kinds of livestock may suffer from these plants was known early in the history of America. For instance, it was recorded before the middle of the eighteenth century that our ordinary mountain laurel is poisonous to livestock.

Early in the history of the Department of Agriculture this topic came to the front. Probably the first recorded study was that of loco, which was discussed in 1873, before the establishment of the department. Since 1894 scientists of the department have studied this subject with the hope of reducing the losses and with material success.

Regional Conditions Play Important Part

Though much work had been done on poisonous plants in other countries and though many American plants are either identical with those of foreign countries or closely related to them, the conditions under which domestic animals are cared for in America are so different that entire reliance can not be placed on preceding work.

FIG. 179.—A locoed steer in the last stages of poisoning—too weak to stand

For example, the larkspurs, which cause so many deaths in our American cattle, are not recorded as making any trouble in other countries.

The losses in the eastern part of the United States are in many respects comparable with those in Europe, that is, comparatively few animals are lost. In the West, however, owing to the abundant growth of some poisonous plants, to climatic exigencies, and also to the manner in which range animals are handled, losses have been extremely heavy. The death of hundreds of sheep, or of 50 or more cattle at one time is not unusual, and sometimes, as in the case of loco poisoning, the horses in some localities have been almost wiped out.

In beginning the investigation it was essential to have as complete knowledge as possible of preceding studies of this subject. Fortunately, a card catalogue was commenced at the very beginning of the work in 1894, and has been kept up to the present time, so that

now there are very nearly complete lists of the literature on the subject. Inasmuch as there was much doubt as to the plants which caused the losses in American pastures and ranges, extensive field investigations of poisoning cases were necessary. In this work a large part of the United States has been covered, the range region of the West with special thoroughness.

Early in the investigations, chemical and pharmacological work was begun for it was recognized that this was of fundamental importance for a complete understanding of the subject. Such studies have been continued up to the present time with important results.

Theoretically, many of the practical problems could be settled in the chemical laboratory. While this work is essential, it was evident that it would not take the place of field feeding experiments. Field conditions can not be reproduced in the laboratory, and from the beginning of the experimental work attempts were made to carry on feeding experiments in the localities where the plants were supposed to do harm, reproducing, so far as possible, the conditions under which animals under investigation had been kept.

Experiments with Suspected Plants

With this in view feeding experiments in the field have been a continual feature of the investigations. One of the first subjects taken up was the study of loco through a series of feeding experiments in Montana. Later, a station for this purpose was established in Hugo, Colo., and used for four summers. Other feeding stations for the study of loco were established in Nebraska and in the Pike's Peak region of Colorado. Later a station was established in the mountains of Colorado with the main purpose of studying larkspur and lupine poisoning. Another station was conducted in the Yellowstone Valley of Montana, where the special subjects of study were loco, lupine, and death camas.

At the present time a well-equipped station is being used near Salina, in southern Utah. This was established with especial reference to studies of death-camas poisoning, oak poisoning, and sneezeweed poisoning. A large number of other subjects are also being taken up and carried to completion.

Besides these regular stations feeding experiments have been carried on in New Mexico on the rayless goldenrod and in Texas on shinnery oak. Another branch of the work has been plant surveys in many localities to determine the distribution of poisonous plants.

Some of the laboratory work has been handled at the field stations, but all that does not have to be done immediately is taken care of in the department laboratories at Washington, D. C. There the results of the first studies are carefully worked up, including microscopic examinations of tissues.

The object of all this work is to prove definitely whether a plant is or is not poisonous, and if it is poisonous to determine the symptoms which are produced, to find the conditions under which the poisoning takes place, whether a plant is more poisonous in one season than another, whether any particular part of the plant is especially poisonous, and then finally to find out what can be done to reduce the losses.

Preventing Losses

It may be that a remedy can be found for the sick animals, as has been done in the case of loco and cocklebur. It may be that, by

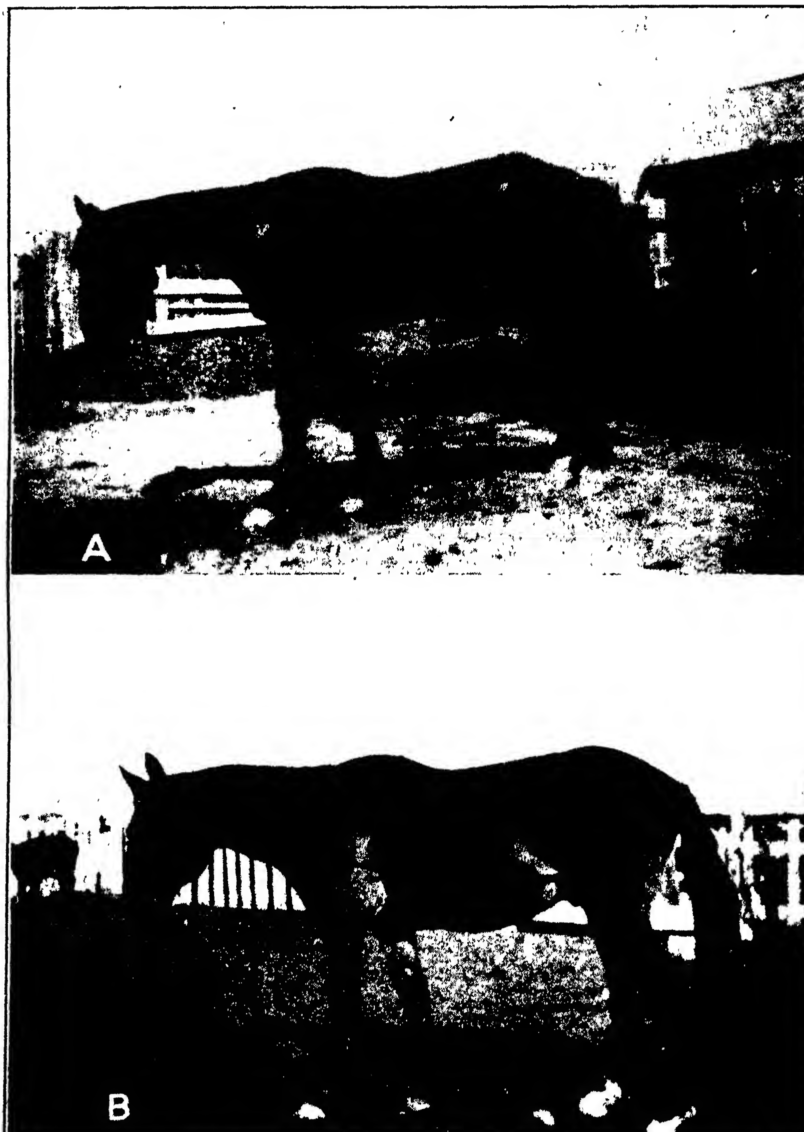

FIG. 180.—A, Horse in a badly locoed condition and weighing only 510 pounds. B, The same horse about three months later and following successful treatment of loco poisoning, formerly believed to be incurable. The horse gained 315 pounds in weight and was sold for a good price

grazing only a part of the season, the trouble can be avoided. This is true of the low larkspur, for instance, which does no harm after about the first of July.

This experimental work was begun in 1894 by the division of botany, which afterwards was included in the Bureau of Plant Industry. The work was carried on by the Bureau of Plant Industry until 1915. From 1915 to the present time the experimental work with animals and the general direction of the subject has been under the Bureau of Animal Industry.

Other agencies of the department, however, have contributed largely to this work. The botanical side of the subject is still cared for by the Bureau of Plant Industry. Such work includes a study of the distribution of the plants and the accurate determination of the species of the supposed poisonous plants, for it is essential to know definitely the species on which experiments are made. For example, there are many nonpoisonous, leguminous plants which so closely resemble the true loco plants that frequently they all are grouped together as loco plants. They must be definitely separated and such descriptions made as will be clear, not only to the experimenters but also, if possible, to stockmen.

The Forest Service has cooperated very largely in the work and has built for the purpose three of the field stations. Early in the work also there was cooperation with the Office of Experiment Stations, and there has been more or less cooperation with the State agricultural experiment stations.

The results of the work described are available to stockmen and to the public in more than a score of bulletins and circulars, most of which are free, others being obtainable for a few cents. Public addresses, articles in livestock journals, and, more lately, educational exhibits have also brought this important side of stock raising before stockmen of the country. Yet new problems are constantly arising and the end of the work is not in sight. But it is going forward gradually and systematically, each year adding more to current knowledge on stock-poisoning plants and bringing about a reduction of the losses.

C. Dwight Marsh.

POPULATION Flow From Farms to Cities Declines

A steady stream of young men and women between the ages of 18 and 24 is moving from farm homes to cities. These young people are a surplus, and can not become farmers. A certain backflow of land-loving young people from city to farm also takes place.

Little is known of the normal size of this backflow. The retired-farmer movement is a regular current townward and cityward. A small retired city-man movement farmward may also be counted on. The special prosperity of farming will stimulate a movement of the less stable elements in cities to farms; and likewise any lack of prosperity of farming or unusual prosperity in cities will produce a movement cityward of the less stable elements of population on farms.

The movement of people from farms to cities and the reverse movement from cities to farms together constitute at any one time a fair index of the agricultural situation. The Department of Agri-

culture has made a survey of the gross movements of population to and from farms for the years 1920–1925, with the following results:

Information obtained from many sources indicates that during 1920 there was a net gain in total farm population of approximately 500,000 people over the preceding year, when (December 31, 1919), according to the census reports, there were 31,614,269 persons living on farms. The unusual prosperity attending the farm occupation during 1920 apparently restrained considerably the customary flow to cities of young people between the ages of 18 and 24, while the annual movement of prosperous retiring farmers to town was offset by the arrival of persons from cities drawn to farming by its prosperous condition. The excess of births over deaths on farms resulted in a natural increase.

The year 1921, marked by striking drops in prices for farm products, saw the beginnings of an unusual movement from farms to cities. While many persons who were tempted to leave farming stayed on farms, in the hope that soon the tide of prosperous times would turn and flow farmward, others who were close to the margin of livelihood were compelled to go where there was profitable employment. The result was that though there was a net increase of farm population, it was only 200,000, instead of 500,000 as during 1920.

In 1922 the department survey indicated that a net movement of a million persons from farms to cities had taken place, which entailed a net loss in the farm population of 460,000 persons.

In 1923 the loss to cities continued in full force, causing a net decline in the farm population equal to or possibly somewhat exceeding that of the previous year.

Another careful survey of the population situation in 1924 showed that while the forces at work on farms tending to drive people to cities were still operating in the lives of many—for over 2,000,000 persons moved to cities—other sets of forces were at work sending back from cities to farms a larger number than formerly, viz, 1,396,000 persons. The result of these movements was a net loss to the farm population of 182,000.

For 1925 a continued decrease in farm population was reported to the effect that 479,000 fewer people were on farms January 1, 1926, than January 1, 1925.

The Department of Agriculture estimates the farm population as of January 1, 1926, at 30,000,000 persons. These figures include all men, women, and children living on farms.

Each geographic division of the United States showed a net decrease in farm population during 1925, the lowest percentage of decrease being in the West South Central States, the highest being in the Mountain States.

The large gross movement from farms to cities, which has been at or slightly above the 2,000,000 mark a year since January 1, 1922, apparently still overbalances the gross movement from cities to farms, even when the increase on farms by births over deaths is added in.

C. J. GALPIN.

POTASH Hunger in War Years Taught Lesson Numerous field tests as well as the experience and observations of farmers have shown clearly the necessity for potash in crop production; not only in the effect it has on crop production but in many cases the influence it may have on crop quality. No more striking illustration of the importance of potash to agriculture, or one on a broader scale, will probably ever be in evidence than the situation created during the World War, owing to the acute shortage of potash brought on by war conditions.

Before the World War the United States was dependent on Germany for the potash it needed in agriculture and the industries. In 1913, for example, slightly more than 1,000,000 tons of potash salts were imported. This was equivalent to about 255,000 tons of actual potash. Of this huge order agriculture used from 90 to 95 per cent. During the war period the incoming supply of German potash was gradually cut down until in 1918 less than 300 tons were imported. In order to avert a potash famine, American resourcefulness and capital came to the rescue. As a result this country developed its potash resources to such an extent that the quantity of domestic potash produced gradually increased until in 1918 a production of about 55,000 tons of actual potash was reported. This was enough to take care of between 20 and 25 per cent of the pre-war potash requirements. With the end of the war and the importation of potash from both Germany and France, domestic production dropped off considerably, but in recent years has come up somewhat.

Shortage Acute in 1916 and 1917

In 1916 and 1917, the shortage of potash became so acute that crops suffered severely from a lack of it in fertilizer mixtures. This was more noticeable on lighter soils, and with crops which usually respond to potash, chiefly potatoes, sweet potatoes, tobacco, and cotton. Potash hunger was a term used to signify the condition resulting from lack of potash. On certain soils potash hunger showed itself much more severely than on others, even though in the same vicinity. In fact, some soils hardly gave evidence of the trouble. The potato crop was disturbed to a considerable extent and in sections where large fertilizer applications were customarily made the trouble was more serious. With very little, if any, potash in mixed fertilizers many growers still used a ton to the acre. So much nitrogen and phosphoric acid without potash in many cases cut the yield considerably. Experimental work showed that when enough potash was added to a nitrogen-phosphoric-acid mixture, the potato plants grew normally (fig. 181, A) and gave high yields. Without potash the potato plants presented a very dark-green foliage. The leaves were contracted, wrinkled, and drooped. Later on a bronzing effect appeared on the leaves. This was very prominent when looking over a large field of potatoes. Frequently the plants became so weakened that they actually drooped and finally collapsed owing to bacterial infection or other secondary causes (fig. 181, B). The final yields would be greatly reduced.

Cotton-Rust Problems

In the case of cotton, the lack of potash was particularly marked on sandy soils and resulted in a condition known to cotton growers as

FIG. 181.—Potash and potatoes. A, Potato plant which received potash fertilizer. B, Potato plant suffering from lack of potash

cotton rust. This trouble became fairly general on coastal plain soils but was hardly observable on the Piedmont plateau soils, these soils being better supplied with potash than the sandy soils of the

coastal plain. In the case of the cotton plant the symptoms of potash hunger were just as marked as with the potato plant. When potash fertilizer mixtures were available the trouble was not in evidence. Other crops were affected in much the same way as potatoes and cotton.

Field tests carried on during the period when potash was lacking brought out some interesting facts. For one thing potash, regardless of the source, afforded direct relief and showed our agricultural dependence on potash salts. Even small quantities were helpful. Manure, which contains some potash, also was helpful in preventing potash hunger. It was found through such work that the high percentages of potash used in fertilizer mixtures before the war were not required for maximum crop production. Some soils could do with comparatively little potash. Owing to the lack of potash it was often found better to use less nitrogen and phosphoric acid. This was more marked on some soils than on others.

While the potash-hunger lesson was a severe one it was, nevertheless, instrumental in making the country more fully realize our dependence on foreign potash. The splendid efforts to utilize our domestic potash supplies and to develop our resources along this line were very gratifying and showed that we were able to become independent to an important extent. Coupled with the fact that less potash can be recommended on some crops than was being done before the war, this makes our knowledge of where we stand with respect to potash much clearer than before the World War.

B. E. Brown.
J. J. Skinner.

POTASH Resources in United States Considerable

Following the discovery in Germany of great subterranean deposits of potash and the commercial exploitation of these deposits, the use of potash as a fertilizer became a matter of common practice in America. Prior to the World War practically all the potash used by American farmers came from Germany—an unsatisfactory state of affairs, because of the long haul from the German mine to the American farms, and because in case of war between Germany and any other large naval power oceanic shipments of potash would be interrupted and America would be deprived of her supplies of this important agricultural material.

This is what happened during the World War: German potash could no longer be imported, and the price of potash soared from 60 cents to over $6 per unit, showing how essential it is that America be rendered independent of foreign sources of potash.

Nation-wide surveys of American potash resources made by the department have revealed unlimited quantities of potash-bearing materials, including natural brines, kelp, potash minerals, and trade wastes. As they occur, unfortunately, they are not in a form suitable for fertilizers. Either they are too low in potash or else the potash which they contain is not water-soluble, or available for plant use. The problem, therefore, is to devise methods of treatment to render these potash materials suitable for the fertilizer manufacturer. Generally, it is not enough that the potash alone be extracted, but that

other products of value be obtained to share the cost of the potash extraction. These are the problems which the department is now trying to solve in its potash investigations.

Potash Raw Materials

The potash raw materials now regarded as important are the following: The giant kelps of the Pacific Ocean; the natural, desert brines of California; the potash minerals like alunite of Utah, leucite of Wyoming, shale of Georgia, feldspár of many States, and greensand of New Jersey, Delaware, and Maryland; and the industrial wastes such as cement dust, blast-furnace dust, beet-sugar molasses, and the waste waters from alcohol manufacture.

In these waste materials sufficient potash is lost each year, which if saved would supply almost all of that now required by the American farmers; whereas that contained in the natural deposits is sufficient

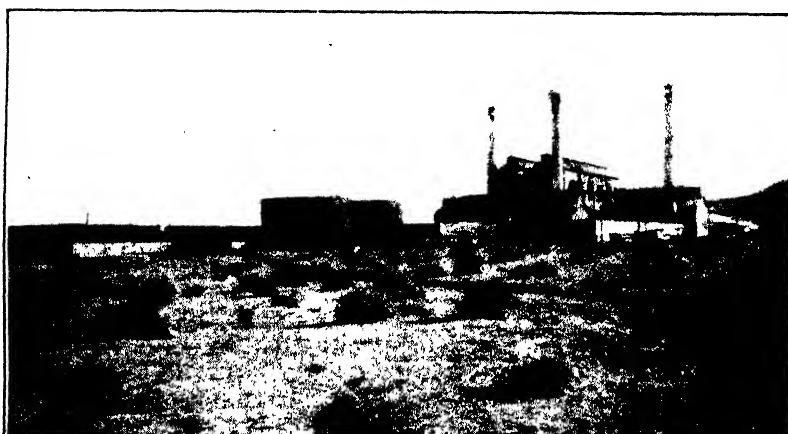

FIG. 182.—An American potash plant. Searles Lake, Calif. Here a high-grade muriate of potash is produced from the salt water of Searles Lake

to supply any quantity for an indefinite period. In the greensand deposit of New Jersey alone there is sufficient potash within reach of the steam shovel to last America for 1,000 years, based on the present rate of consumption. Greensand is America's largest and most favorable potash resource so far discovered.

The American potash industry, as now established, produces about 12 per cent of the potash consumed in the United States, the other 88 per cent being imported from Europe. This domestic product is derived principally from Searles Lake, Calif., as a very pure and high-grade muriate of potash (fig. 182), and from the waste water of alcohol manufacture at Baltimore, Md., as a high-grade mixture of potash salts which may be described as "plant ash." Other smaller quantities of potash are produced from other sources. With the continued development of new processes and the establishment of new plants and the growth of those already established, there is every reason to believe that America in time will become quite independent of all foreign sources of potash. American potash should mean

cheap potash, as it will be produced close to the point of consumption and it will be produced by processes yielding other valuable products to share its manufacturing costs.

J. W. TURRENTINE.

POTATO Seed Certification Although it is less than a decade and a half ago that a seed-potato certification inspection service was first offered to Wisconsin potato growers, the interest in the improvement of seed potatoes in seed-producing sections has been so great that such service is now offered by approximately half of the States. Since the institution of this service there has been a gradual raising of the standards of the seed stock and a greater uniformity in the certification rules under which the field inspectors operate. The current notion so characteristically held a few years ago, that the source of seed was of relatively little importance, has been largely abandoned.

In a rather recent paper by Moore,[16] of Michigan, there is embodied one of the best summaries yet presented on the relative merits of certified versus uncertified seed potatoes. These data included 15 reports from eight Canadian Provinces in which an 88-bushel per acre increase was noted in favor of certified seed. In 21 Delaware tests there was an increase of 83 bushels, and 87 reports from Pennsylvania indicated an average gain of 41 bushels. From 144 tests in Connecticut there was a 53-bushel increase, and from 31 tests in Louisiana the gain was 41 bushels; 8 tests in South Carolina resulted in 31 bushels increase, and 279 tests in Maine gave an average increase of 83 bushels; 9,740 tests in Indiana showed 44 bushels increase; 220 reports from Kentucky showed an average gain of 42 bushels; 68 tests in New York resulted in an average increase of 76 bushels, and 268 tests in Ohio gave a 48-bushel increase; 65 tests in New Jersey gave an average increase of 45 bushels; Missouri's 46 reports showed 43 bushels increase and Illinois's 15 tests averaged 47 bushels gain; Nebraska made 64 tests, which averaged 141 bushels increase, and Oregon's 3 reports resulted in 150 bushels increase; 2 reports from Montana showed an average gain of 219 bushels, and in Michigan 314 reports indicated a 73-bushel increase. In 327 tests of Michigan-grown seed in other States there was an average increase of 50 bushels per acre. The average total results in Canada and the United States, based on 11,627 reports, show an actual increase from certified over uncertified seed of 46.4 bushels per acre.

Certified Seed Best

Assuming that the above data fairly reflect the actual average value of certified and uncertified seed, it is evident that as a rule the grower of potatoes, for either seed or table purposes, should use certified seed. The rather wide variations in the yield of certified and uncertified seed may be largely attributed to variations in the character of the uncertified seed used. The important thing to keep in mind, however, is that it pays to use certified seed potatoes. This is especially true with respect to the grower who is unable to make

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[16] MOORE, H. C. EVIDENCE THAT CERTIFIED SEED IS IMPROVED SEED. Proc. Eleventh Ann. Meeting Potato Assoc. Am., p. 26–40, 1924.

a summer inspection of fields with a view to direct purchase of his own seed supply.

Every purchaser of certified seed potatoes should carefully inspect the seed-certification tags affixed to each sack. If these tags are not attached to the sacks or leave doubt as to their genuineness, the stock should be questioned. It is suggested that a sample certification tag be requested from each certification official some time in advance of purchase of seed stock from any given State. This would permit of becoming familiar with the genuine tag.

WILLIAM STUART.

POTATO Supply—Effect on Markets It is commonly believed that a small crop of potatoes is usually worth more to the United States producers than a large crop. If the large crop of 425,000,000 bushels harvested in 1924 was valued at the reported average farm price for the season ($0.765), it would have been worth $325,000,000; whereas the small crop of 323,000,000 bushels harvested in 1925, if valued at that season's average price of $1.835, would have been worth $593,000,000. Thus 100,000,000 bushels less in 1925 than in 1924 made the crop worth $270,000,000 more. If producers had marketed as large a proportion of the large crop as they did of the small crop, the price would probably have been even lower than $0.765, and the difference in value correspondingly greater.

The reason for this contrary behavior of crop values is to be found in the habits of people with respect to the consumption of potatoes. Even when potatoes are high in price they are relatively cheap compared with other foods which make up the average person's diet, and there is no other food which will quite take the place of potatoes. For these reasons many people will pay a relatively high price for potatoes in years of short crops rather than to forego the enjoyment of their usual rations of this standard vegetable.

In years of large crops the situation is different. Though people are unwilling to decrease their consumption of potatoes when prices are high, they are likewise unwilling to increase their consumption when prices are low. There is no good substitute for potatoes in years of high prices, but according to our present standard of living neither are potatoes a good substitute for other foods when prices are low. Consequently the quantity of potatoes consumed tends to remain relatively constant, regardless of the price, which means that producers can obtain higher prices when the crop is short, but can not dispose of a large crop except at very low prices.

During the period since 1908 there has apparently been a change in the reaction of consumers to low potato prices. The reasons for this apparent change are probably to be found in the increased prosperity of wage earners since the war, which has enabled them to afford a more varied diet, and to rely less on potatoes as a staple food. It has also enabled them to save money in other ways than by living on the cheapest foods, which heretofore has stimulated the consumption of potatoes when prices were low. Another factor may be the marked increase of supplies of other vegetables often at prices sufficiently low to encourage variety in the bulky part of the diet.

The change in the supply-price relationship of potatoes is of considerable significance to potato growers. It means that the price of potatoes is now more sensitive to changes in supply, and that large crops such as were produced in 1922 and 1924 are almost certain to result in very low prices—lower than crops of the same size would have brought before the war, were it not for the increase in the general price level. The fact that a large crop is worth considerably less than a small crop, though costing more to produce, is a warning to potato growers against overplanting after a season of high prices, and overmarketing in a season of large crops.

E. M. DAGGIT.

POTATO Yields Best From Good Seed The significant advances which have been made in our knowledge of potato diseases during the past decade have served to emphasize more forcefully than ever before the tremendous importance of good seed potatoes. Discovery of the method of transmission of mosaic and other virus diseases of the potato from infected to healthy plants has, in a measure at least, revolutionized our preconceived notions regarding degeneration or the "running out" of varieties or strains of potatoes. The term degeneration as now used has an entirely different significance as it simply conveys the idea that the variety or strain so designated is affected with one or more of the virus diseases, such as mosaic, leaf roll, spindle tuber, yellow dwarf, or giant hill. Our old conception of degeneration or senility in plants has, therefore, been discarded. It is now believed that old-age debility does not normally occur in plants propagated vegetatively. In other words, if the potato is kept free from disease there is no reason why its propagation may not be continued indefinitely, provided it is grown under suitable environmental conditions.

The first requirement in good seed potatoes is that they be as free as possible from seed-borne diseases, at least of those which can not be destroyed by treatment in either the hot or cold corrosive sublimate or formaldehyde solutions. The stock must be true to name, free from varietal mixtures, and conform reasonably well to the type of variety. It must also possess good vigor and high productive capacity.

For many years efforts have been made to isolate superior yielding strains from our leading commercial varieties of potatoes. These efforts have been made in the belief that within any given variety bud variations or somatic changes may arise which may result in a more productive or vigorous strain of plants.

Certified Seed Studied

With a view of determining to what extent such strains might occur in the hands of potato growers the department in 1919, in cooperation with the Wisconsin Agricultural Experiment Station, began a study of the comparative merits of different lots of certified seed potatoes for the purpose of determining the best strains of seed stock in five of the leading commercial varieties. These studies which were continued over a period of five years resulted in demonstrating rather

convincingly in the first three seasons that there were outstanding differences in yield. These differences in some cases amounted to over 100 bushels per acre or nearly 100 per cent more than the lowest yielding strain. The increases were so striking as at once to arrest the attention of the growers with the result that the low-yielding strains were replaced by stock from the high-yielding ones.

The rather general acknowledgment of this principle at the present time makes possible the further improvement of seed stocks. In all such tests, however, careful observance must be made as to the presence of disease in the seed stock. There is little doubt that some of the variations in strain test yields have been largely due to the presence of disease in the seed stock used. One of the most carefully conducted strain or selection tests is that reported by Myers[17] in which a three-year average gain from selected over unselected stock of 48.1 bushels per acre was obtained.

Other examples of the value of selected seed over that of unselected or of certain strains over others might be cited, but it is felt that little would be gained by so doing.

The importance of good seed has been most strikingly demonstrated by the 300 and 400 bushel potato clubs of Pennsylvania and Michigan. In 1923, 54 Pennsylvania potato growers qualified for membership in the 400-bushel club. The average yield per acre of these 54 growers was 444 bushels, while 4 growers produced 500 or more bushels. The prize acre yielded 532 bushels. During the same season the potato growers of Pennsylvania averaged 105 bushels per acre or slightly less than one-third the average yield of the 54 growers and not quite one-fourth that of the prize acre.

Good Seed Not Sole Factor

In the presentation of these data it is not proposed to imply that the use of good seed was solely responsible for these high yields. It is assumed, however, that all will agree that large yields can not be produced from poor seed. In other words, it will be admitted that good seed potatoes are a prerequisite to large yields. Good soil, an abundance of plant food, and excellent cultural care coupled with good seed furnish the conditions necessary to a large crop. The soil must be thoroughly prepared before planting; seed must be used liberally; preemergence tillage to prevent weed growth, and subsequent tillage of the growing crop must be performed with intelligence, and insect and fungous pests must be effectively controlled by timely applications of suitable insecticidal and fungicidal preparations if maximum yields are to be expected. The potato grower should always keep in mind the fact that it costs no more to plow or cultivate an acre of land for a good than a poor crop, and that the extra expense involved in better spraying for the control of insect and fungous pests is more than repaid in the extra bushels produced. The man who produces 400 bushels of potatoes per acre at a cost of $175 per acre will usually make a fair profit, whereas the one who produces 150 bushels at a cost of $100 per acre will usually lose

[17] MYERS, C. H. HOW TO IMPROVE THE YIELD AND QUALITY OF SEED POTATOES BY SELECTION AND TO MAINTAIN SUCH IMPROVEMENT. Proc. Eleventh Ann. Meeting Potato Assoc. Am., p. 5-14, 1924.

money. In the one case the bushel cost is 43.75 cents, whereas in the other it is 66.67 cents.

The increasing demand for good seed furnishes ample evidence that the wide-awake potato grower recognizes the importance of planting good seed and is making every effort to procure it.

WILLIAM STUART.

POULTRY Accreditation a Stabilizing Market Influence The natural tendency toward specialization in the poultry industry and the recent rapid growth of the commercial hatchery business have made necessary improved conditions of sanitation in poultry plants and the production of breeding stock of sound, constitutional vigor. The accreditation of breeding flocks and hatcheries appears to be the only sure means of accomplishing these fundamental improvements.

FIG. 183.—A flock of standardbred Barred Plymouth Rocks It has not only been rigidly culled on the basis of standardbred and egg-production qualities but each member of the flock will pass the rigid inspection system required in the accreditation of breeding flocks

The purposes of accreditation in general are to reduce losses in the poultry industry and to make the hatching and breeding business more efficient. The improvement begins with the quality of chicks hatched, which in turn means better-laying pullets and higher-quality eggs and poultry meat. The preamble to the uniform plan of accreditation which is being adopted by most of the States shows the fundamental aim of the work. It reads:

> Health is the foundation of successful husbandry since upon it depend successful production and reproduction. Constitutional vigor is the best insurance against ill health. Every poultryman and every hatchery man, therefore, is under obligation to maintain his laying and breeding stock in the best possible state of health by keeping only those birds which are constitutionally fit, and by keeping his premises in the best possible state of sanitation.

The accreditation program has to do primarily with the hatcheries and the breeding flocks supplying their eggs, and provides for the accreditation of breeding flocks, as well as of eggs and chicks from those flocks, and finally of the hatcheries themselves.

Among other things, accreditation rules provide for the handling of every bird in the breeding flock. This is analogous to inspection work for the larger domestic animals by official inspectors, except that in the case of poultry the inspection work is being done at the producing plant. In the second place, accreditation provides for thorough and rigid culling of the flocks for the elimination of diseased specimens as well as those birds that do not conform, within a reasonable degree, to certain standard and production requirements. All the inspectors by whom the culling is done must have had an approved course of training and they must be authorized by a responsible State agency.

Supervision of Hatcheries

The hatcheries must be kept clean and sanitary at all times and their managers will be allowed to accept eggs for hatching purposes only from accredited flocks. Eggs received and chicks hatched are

FIG. 184.—An unculled flock that could not be used in producing hatching eggs for an accredited hatchery

subject to inspection at any time and the management is required to keep a set of records which will give the inspectors fairly complete information concerning the operations of the hatchery. The eggs used for hatching must weigh at least 1⅞ ounces each besides being uniform in shape, color, and shell. Continuous selection of heavy eggs for hatching purposes will result in the development of strains that in turn lay good-sized eggs. Therefore the rigid enforcement of this one ruling probably will do more than any other one thing to reduce the high proportion of small eggs now going on the market.

Another important feature of accreditation work is that it officially recognizes those breeders and hatchery operators who take the initiative in eliminating bacillary white diarrhea from the breeding flocks. It is known that this disease takes a heavy toll not only in decreasing hatchability but in increasing chick mortality, and its elimination from the breeding flocks will undoubtedly cause a marked improvement in hatching results as well as in the vitality of chicks.

The whole problem is essentially one of education among breeders and hatchery operators, and accreditation is designed as an educational program, the benefits of which accrue to producers, distributors, and consumers. Moreover, the accreditation work as now carried on is largely self-supporting, the major costs being borne by the producers who derive the first benefits in reduced losses.

Improvement of the quality of the breeding stock lies at the very foundation of the poultry industry. A clean industry and wholesome products make satisfied consumers, less loss to distributors, and greater profits to producers.

M. A. JULL.[1]

POULTRY Disease Prevention The value of prevention as compared with cure is enormous in the case of poultry diseases. Much has been said about the diseases of poultry, but that subject is merely the negative side of one vastly more vital, namely, the health of poultry. The cost of poultry diseases far outweighs the price of prevention. The ravages of disease are always costly in life, longevity, vigor, and productivity, among poultry or other livestock.

The idea that disease is a necessary evil, to be grappled with when it comes, is no more true of poultry diseases than of those which affect man or other animals. The successful prevention of poultry diseases demands knowledge of their causes and effectual means of combating those causes. Diseases affecting poultry are infectious, nutritional, or environmental. Although these classes may often overlap, one or the other as a rule constitutes the real starting point of a given outbreak of disease. Space will permit only a brief discussion of the general means of disease prevention that apply to each of these divisions.

Sanitation the First Rule

In preventing infectious disease, sanitation is the first rule. The bars are thus erected against infection. New stock is quarantined until all doubt as to its freedom from infection is removed. The flock is protected from polluted water, contaminated food, disease-disseminating birds or vermin; in fact, safeguarded from infection by every possible avenue.

Prevention of infection includes prevention of its spread. In the event that a disease makes its appearance in the flock, the affected birds should be promptly isolated until cured, or else disposed of. The latter course is frequently cheaper for the owner, and safer for the other birds of the flock. Along with isolation goes disinfection, in order that, with the removal of the infected bird, the owner may also destroy the infection which has been scattered by that bird. This disinfection process should be preceded by a rigorous campaign of cleaning, and may be governed in its details by the nature of the disease to be overcome.

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[1] Doctor Jull, as chairman of the committee on accreditation and certification, appointed by the Poultry Science Association, has been working with the various States in the adoption of a uniform plan of accreditation and certification of poultry. About 34 States now have some form of accreditation-certification work in operation, and material progress has been made in the work.

a summer inspection of fields with a view to direct purchase of his own seed supply.

Every purchaser of certified seed potatoes should carefully inspect the seed-certification tags affixed to each sack. If these tags are not attached to the sacks or leave doubt as to their genuineness, the stock should be questioned. It is suggested that a sample certification tag be requested from each certification official some time in advance of purchase of seed stock from any given State. This would permit of becoming familiar with the genuine tag,

WILLIAM STUART.

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The reason for this contrary behavior of crop values is to be found in the habits of people with respect to the consumption of potatoes. Even when potatoes are high in price they are relatively cheap compared with other foods which make up the average person's diet, and there is no other food which will quite take the place of potatoes. For these reasons many people will pay a relatively high price for potatoes in years of short crops rather than to forego the enjoyment of their usual rations of this standard vegetable.

In years of large crops the situation is different. Though people are unwilling to decrease their consumption of potatoes when prices are high, they are likewise unwilling to increase their consumption when prices are low. There is no good substitute for potatoes in years of high prices, but according to our present standard of living neither are potatoes a good substitute for other foods when prices are low. Consequently the quantity of potatoes consumed tends to remain relatively constant, regardless of the price, which means that producers can obtain higher prices when the crop is short, but can not dispose of a large crop except at very low prices.

During the period since 1908 there has apparently been a change in the reaction of consumers to low potato prices. The reasons for this apparent change are probably to be found in the increased prosperity of wage earners since the war, which has enabled them to afford a more varied diet, and to rely less on potatoes as a staple food. It has also enabled them to save money in other ways than by living on the cheapest foods, which heretofore has stimulated the consumption of potatoes when prices were low. Another factor may be the marked increase of supplies of other vegetables often at prices sufficiently low to encourage variety in the bulky part of the diet.

The whole problem is essentially one of education among breeders and hatchery operators, and accreditation is designed as an educational program, the benefits of which accrue to producers, distributors, and consumers. Moreover, the accreditation work as now carried on is largely self-supporting, the major costs being borne by the producers who derive the first benefits in reduced losses.

Improvement of the quality of the breeding stock lies at the very foundation of the poultry industry. A clean industry and wholesome products make satisfied consumers, less loss to distributors, and greater profits to producers.

M. A. JULL.[1]

POULTRY Disease Prevention The value of prevention as compared with cure is enormous in the case of poultry diseases. Much has been said about the diseases of poultry, but that subject is merely the negative side of one vastly more vital, namely, the health of poultry. The cost of poultry diseases far outweighs the price of prevention. The ravages of disease are always costly in life, longevity, vigor, and productivity, among poultry or other livestock.

The idea that disease is a necessary evil, to be grappled with when it comes, is no more true of poultry diseases than of those which affect man or other animals. The successful prevention of poultry diseases demands knowledge of their causes and effectual means of combating those causes. Diseases affecting poultry are infectious, nutritional, or environmental. Although these classes may often overlap, one or the other as a rule constitutes the real starting point of a given outbreak of disease. Space will permit only a brief discussion of the general means of disease prevention that apply to each of these divisions.

Sanitation the First Rule

In preventing infectious disease, sanitation is the first rule. The bars are thus erected against infection. New stock is quarantined until all doubt as to its freedom from infection is removed. The flock is protected from polluted water, contaminated food, disease-disseminating birds or vermin; in fact, safeguarded from infection by every possible avenue.

Prevention of infection includes prevention of its spread. In the event that a disease makes its appearance in the flock, the affected birds should be promptly isolated until cured, or else disposed of. The latter course is frequently cheaper for the owner, and safer for the other birds of the flock. Along with isolation goes disinfection, in order that, with the removal of the infected bird, the owner may also destroy the infection which has been scattered by that bird. This disinfection process should be preceded by a rigorous campaign of cleaning, and may be governed in its details by the nature of the disease to be overcome.

[1] Doctor Jull, as chairman of the committee on accreditation and certification, appointed by the Poultry Science Association, has been working with the various States in the adoption of a uniform plan of accreditation and certification of poultry. About 34 States now have some form of accreditation-certification work in operation, and material progress has been made in the work.

In preventing the start or spread of poultry disease it has been found of value to shift the flock from one place to another, from year to year. This is accomplished either by the use of portable poultry houses or by providing runs on each side of the poultry house, either of which is successively used as a poultry run for one year, and alternately cultivated the following year. By this method of rotation the processes of nature have time to destroy many of the germs of disease or the eggs of parasites which otherwise may, with disastrous results, be picked up by the birds.

Correct Feeding a Preventive

Nutritional diseases as a class are the diseases of captivity in the lower animals and poultry. Various forms of nutritional deficiency

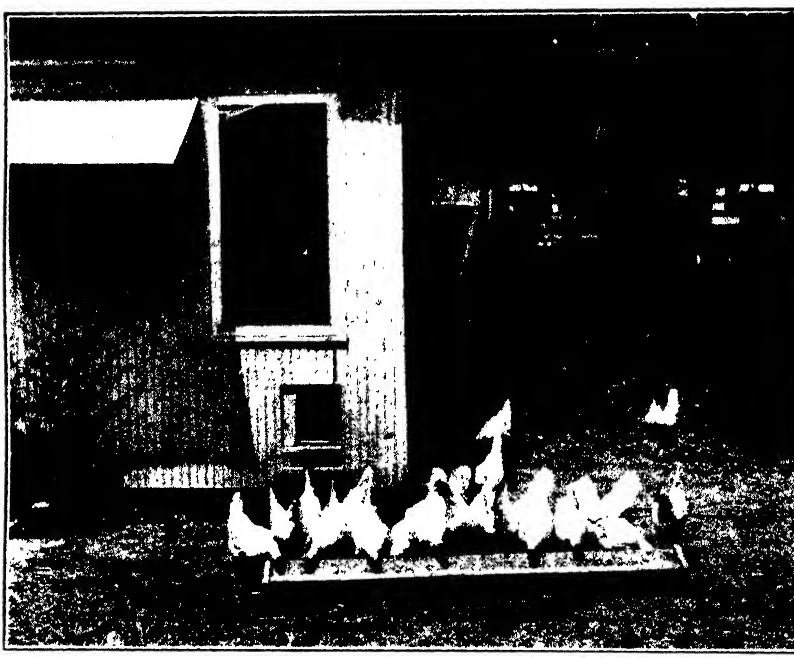

FIG. 185.—Proper selection of feeds and clean equipment will largely prevent the numerous nutritional diseases that affect domestic fowls

produce rather definite symptoms and lesions in birds. The nutritional disease manifestations include rickets, false roup, leg weakness, and polyneuritis (St. Vitus's dance), with more or less emaciation, anemia, and functional depression. The most common form of nutritional surfeit in poultry is gout, a disease caused by excessive protein feeding. Obesity, from excessively starchy rations, is also common in hens. The general principle of correct poultry feeding is to supply the flock with such essentials as whole and ground mixed cereals, animal protein in proper quantity, shell, grit, and abundant green feed or raw vegetables. Proved formulas issued by this department for the feeding of poultry afford adequate protection against the ordinary nutritional diseases.

In close relation to nutritional diseases stands a group of conditions caused by the eating of spoiled feeds. It is needless to say that all feed supplied to poultry should be fresh, clean, and free of molds, decomposition, or contamination of any sort.

Environmental diseases in poultry are those which are traceable to the conditions under which the birds are kept. Bad ventilation and drafts or dampness in the poultry house are liable to produce definitely adverse consequences. Chilling or overheating, crowding, or lack of direct sunlight are frequently responsible for disease and death among poultry of any age, particularly young birds. Aside from the necessity of a correct type of poultry house, it is important to put the building on well-drained soil, situated so as to shelter the flock from the force of the prevailing storms.

In overcoming the disease tendency of birds caused by their habits of flocking together, it is advantageous to divide a large flock into smaller groups or units, with separate quarters. In that way the conditions of living are under better control. There is less crowding, less dissension in the flock and a more equal distribution of the daily ration allowance. Also, in smaller groups a possible outbreak of infectious disease is the more readily brought under control and relatively fewer birds are endangered.

Birds of widely varying ages should ordinarily not flock together. And finally, birds of different species should be kept from occupying common quarters, and, so far as is practicable, should be kept on separate ground.

HUBERT BUNYEA.

Poultry and Egg Production Estimates Now Made Accurate current information concerning the production of poultry and eggs is greatly needed. The value of these products in 1925 is estimated to be somewhat over $1,000,000,000—about the same as that of all cattle.

Aside from decennial census figures, about the only information of a general nature available has been the receipts at the principal markets, the annual estimates of numbers of poultry on farms, and production of poultry and eggs as reported by the voluntary crop reporters of the Department of Agriculture. Annual reports from sample farms show the number of chicks hatched, and as this figure is related to numbers raised as reported by the decennial census, estimates of the annual production of poultry have been possible. The total production of eggs has been roughly approximated from the change in numbers of poultry during the year, on the fairly well proven assumption that conditions affecting increase or decrease in numbers tend to influence proportionately the production of eggs. The receipts of eggs at the principal markets appear to bear out this assumption.

Since September, 1924, the crop correspondents have been reporting the number of hens and pullets of laying age in their flocks and the number of eggs laid, on the first day of each month. These samples number about 20,000 and include both ordinary and commercial farm flocks, with a small proportion of town flocks. They should afford dependable information on the monthly trends of egg production. Owing to the time required for eggs to reach the mar-

ket, these reported layings at the first of the month tend to synchronize with the mid-month supply of eggs at the central markets.

In constructing an index of layings per farm, difficulty has been had with the irregular reports for large commercial flocks which may be included one month and missing the next, thus introducing large variations into the averages and masking the actual trend.

Index of Layings

The published index of layings in 1926, compared with 1925, is based upon relative layings per 100 hens. The changes from month to month in layings per hen are much more uniform and comparable than those per farm. The influences affecting layings per hen in a large number of sample flocks selected at random tend to affect in like proportion the average layings in all flocks. On the other hand, the index of layings per 100 hens is not satisfactory as an index of production, because the constant and material changes in number of birds in the laying flock are not considered. The present index is, therefore, a temporary expedient until something better can be developed.

By the exclusion of the returns of exceptional flocks, which is to be undertaken, satisfactory comparisons per farm will be possible on the basis of a large number of flocks of representative number and type. It should then be possible to estimate with reasonable assurance the monthly production of eggs per farm and hence approximate actual total production. This new basis will be established as soon as the complete figures for 1924 are available from the United States census.

An analysis of a portion of the material assembled through the monthly inquiry of 1924 and 1925 appears in the March, 1926, Supplement of Crops and Markets, and the monthly index of layings is published regularly in the same publication.

S. A. Jones.

POULTRY Industry Expansion A decided expansion in the poultry industry during the five-year period 1920–1925 is revealed by census figures. The increases are greatest in the States in which specialized poultry farms are most common and smallest in those States where production is obtained mainly from the farm flocks. Thus egg production in New Jersey increased more than 100 per cent in the five years; in Connecticut 82 per cent, in Washington nearly 100 per cent, and in California more than 50 per cent. On the other hand, egg production in Wisconsin increased only 14 per cent, in North Dakota less than 1 per cent, Iowa 11 per cent, Nebraska 12 per cent, Kansas 22 per cent, and Oklahoma 13 per cent—all of these being States in which the farm flock is predominant.

The increase in egg production has resulted from two different factors—a greater number of laying hens in the country and a greater production per hen. More farmers are interested in poultry, and there is a tendency toward greater specialization in this phase of the farm business and therefore toward larger flocks. Changes which have taken place in production methods have been largely

responsible for the increased size of the producing units by reducing the labor in rearing young stock and in caring for the laying flocks. The development of mammoth incubators, by means of which larger flocks of chicks of the same age could be procured; the use of stove brooders, which made possible the brooding of the chicks in larger units; and newer information regarding feeding and management have been the principal factors working in this direction.

Causes of Production Gain

Greater production per hen has resulted, in part, from better methods of feeding and management, but principally from the interest in and the development and wide use of bred-to-lay stock. It is logical to presume that the influence of this improved stock would be greater in the sections where specialized egg farming is prevalent than in sections where farm flocks are predominant. A rough measure of the improvement is available from the census figures.

TABLE 20.—*Eggs produced per chicken on farms, 1919 and 1924* [1]

State	1919	1924	State	1919	1924
New Jersey	62.9	80.0	Nebraska	50.8	48.7
New Hampshire	77.9	81.3	Iowa	52.2	53.0
Connecticut	67.9	83.1	Kansas	54.0	51.8
Delaware	49.4	56.2	Oklahoma	49.0	47.4
Wisconsin	55.6	55.7	Washington	72.2	93.6
North Dakota	57.7	48.6	California	73.8	91.9

[1] Number of eggs produced in 1919 divided by number of chickens on farms on Jan. 1, 1920, and similarly or 1924.

The results so obtained are inaccurate, but the contrast between the change in the rate of production for specialized States like Connecticut, Washington, New Jersey, and California, and the farm-flock States of Wisconsin, North Dakota, Nebraska, Iowa, Kansas, and Oklahoma is significant.

The development of the baby-chick industry has had a marked influence on the poultry industry. It is estimated that from 400,000,000 to 500,000,000 chicks are being produced annually in the commercial hatcheries for sale to poultrymen and farmers. The business is still growing rapidly. Many poultry keepers no longer hatch any chicks. The large hatcheries afford an excellent opportunity to improve the quality of the stock in the territory in which their chicks are sold and more and more attention is being given to this phase of the business, with good results.

Stabilizing Egg Production

There is a definite trend toward more stable egg production throughout the year, though it has not become especially marked as yet in the entire egg crop of the country. The December receipts of eggs at the five principal markets increased from 2.3 per cent of the total for 1919 to 4 per cent of the total for 1925. The object is to increase production in the fall and early winter months when egg prices are at their highest, and success in this particular is generally accompanied by a lower production in the spring or summer, and

amounts, therefore, to a shifting of a part of the normal spring production into the winter. Better laying stock, more favorable time of hatching the chicks in the spring, better methods of feeding and management and, particularly, the use of artificial light in the laying houses during the season of long nights to prolong the days for the hens are the factors which are making this development possible. Should this trend toward an evener egg production become still more pronounced, it may be expected to reduce the percentage of the annual egg crop which must be held in cold storage.

A trend toward better quality in the poultry products reaching the markets is evident. Replacement of mongrel by improved stock, better feeding and care of the poultry, a better handling of the products on their way to market, and better grading and standardization have resulted in a higher average of quality on the terminal markets.

Probably the most important trend in the marketing of poultry products is the increasing development of cooperative marketing. The eggs and poultry of large groups of producers are now being handled cooperatively on the Pacific coast, and, to an increasing extent, in the Middle Western States. Coincident with this development there has been a tendency for private poultry and egg-packing concerns to be absorbed into large organizations. At the same time the field of influence of the retail chain stores in the consuming markets as distributors of eggs has become broader and broader and with the development of volume sales these organizations are buying supplies to an increasing extent direct from large private or cooperative packers. This development is making competition sharper and the margin of profit smaller both for the wholesale receiver in the terminal markets and the packer and shipper in the country.

R. R. Slocum.

Press Aid to Farmers Increasing Few farmers to-day would willingly be without a farm paper. The present situation is a far cry from the early nineteenth century when the few farm papers that existed circulated mostly among scientists and among professional men who felt that agriculture was to be improved from the top, they obviously being the top. It is a far cry even from the middle of the nineteenth century, when in many a rural community the only paper taken was Horace Greeley's Weekly New York Tribune, a single copy of which was read aloud to a group at the post office on its arrival. Farmers to-day obtain from the agricultural press general farm news, reports of experiments and investigations, the experiences of other farmers, advice—much less than formerly—and general reading of an entertaining and stimulating sort.

The farm press serves, too, as it has served for a considerable time, as a forum for practicing farmers and as a spokesman for agriculture, impressing the needs of this industry upon the nation as a whole. Much of the agricultural progress so far made in the United States is due to the farm press. The Farm Journal was the pioneer among all publications in guaranteeing the advertising appearing in its columns, while it also was the originator of the movement for rural free

delivery of mail. Orange Judd, the agricultural publisher, was responsible for the first agricultural experiment station in this country. Henry Wallace, editor of Wallace's Farmer, inaugurated the running of dairy, corn, and good roads trains. The Progressive Farmer was a leader in the exposure of patent medicine and stock-food frauds. E. T. Meredith, publisher of Successful Farming, was the first publisher to bring advertising experts into direct personal contact with farming and farmers in order to show farm purchasing power. J. H. Sanders, publisher of the Breeder's Gazette, was instrumental in the establishment of registries of draft and speed breeds of horses in the United States, while Farm, Stock and Home carried on a successful compaign to stamp out "stallion peddling." The abolition of bucket shops in Texas was the result largely of efforts of Farm and Ranch. The Capper Farm Press stimulated enormously the boys' and girls' agricultural club movement, being in parts of its territory a pioneer in this activity. Early promotion of the silo was carried on by the Ohio Farmer, whose "silo convention" in 1889 was a unique event.

Agricultural Colleges Sponsored

The farm press has, further, sponsored agricultural colleges; meat inspection; the use of modern household devices in farm homes; police regulations regarding fertilizers, feedstuffs, and seeds; railroad rate regulation; rural credits; traveling libraries; cooperative marketing movements; and numerous other matters of special interest to the farmer.

Among striking developments in the agricultural press in recent years have been the increasing space devoted to matter written by farmers themselves, greater attention to agricultural organization, and emphasis on educational, recreational, and similar social features of rural life. The interest taken by women in agricultural journals has been a potent factor in the growth of the last-named class of material.

Another significant development has been the differentiation of the farm press. This is due both to the expansion of farming in general and to its increased complexity.

Farm papers to-day may be roughly divided into six groups, each of which might in turn be greatly subdivided:

1. The daily agricultural newspaper, published in a large city and dealing chiefly as a rule with livestock marketing conditions.
2. The agricultural paper issued as the weekly or semiweekly edition of a daily newspaper.
3. The general farm magazine, usually a monthly, intended to appeal to the general farmer in any part of the country.
4. The sectional farm paper, usually a weekly, designed for the farmer in a specific region or State, and consequently containing matter dealing with local farming conditions and problems.
5. The paper devoted to a special kind of farming, such, for example, as dairy farming, or a special agricultural movement, such as cooperation.
6. The breed paper, published for the specialist in a breed of livestock.

There are also numerous research journals published for scientific investigators in agriculture and related fields. Certain class and

trade journals, such as those dealing with the farm-implement trade and with milling flour and grain, publish much agricultural material, although they are little read by farmers.

General Newspapers More Interested

Increased attention to agriculture on the part of general newspapers is a notable recent development. One notes a general absence of the contempt for agriculture shown a few years ago by a large portion of the urban press, and finds instead a sympathetic interest. Agriculture has come to be recognized by editors as an essential element in national progress, and the farmer as a significant figure in national life. The emphasis laid on farming by the war stimulated the publication of agricultural matter in the urban press, although certain newspapers had been farsighted enough to give special attention to farming for many years before. To-day a large number of daily newspapers, including those published in the largest cities, employ agricultural editors and devote much space to news and feature articles about farming, either placing these in a special department or scattering them through the paper. Certain dailies with circulations as small as 5,000 have found it worth while to employ agricultural editors.

A marked advance has also been apparent in the attitude of the country weekly, the typical community newspaper, to farming. Whereas a few years ago it was exceptional to find a country paper devoting 10 per cent of its space to farm news, to-day many such papers find agricultural copy their most attractive field. A survey of reader interest made by Harry B. Potter in a typical Illinois community in 1925 showed 63 per cent of the readers interested in agricultural matter. This proportion was exceeded in the survey only in the case of certain strictly local news. A number of community newspapers have exerted marked influence upon the progress of agriculture and agricultural organization in their communities in a very short period.

Farming Interpreted to Public

Attention to agriculture on the part of general newspapers, daily or weekly, possesses special importance to the farming industry. Not only is the farmer supplied with much interesting and useful material but farming is interpreted to the public as a whole. The effect is to promote that understanding of and that sympathy with agriculture which are essential to a permanent solution of its problems.

NELSON ANTRIM CRAWFORD.

PRODUCTION and Consumption Surveys Useful

The increasing commercialization of agriculture makes it imperative for farmers to think of their production programs in terms of market demands; that is, the quantity and quality of products which can be sold to consumers at remunerative prices. Careful studies of the local production, distribution, and consumption of agricultural products are doing much to help focus attention on opportunities for profitable changes in the farming carried on in many areas. Such studies are particularly

timely where the farmers adjacent to growing urban centers have failed to adjust their production to take advantage of changes in transportation rates and facilities.

In these studies the markets within the area are analyzed to determine the quality and quantity of products demanded, the source of supply, the prices paid, and the marketing methods followed. The markets outside the area for products that are grown or can be produced in excess of local requirements are studied in the same way. An inventory of agricultural production in the area is made, the most effective production methods and practices are studied, and an effort is made to determine the possibilities of profitable expansion in production. The primary objective is to obtain a sound economic basis for suggesting and recommending programs of production and marketing that will result in the improvement of agriculture in the area.

An example of studies of this type is the survey of the agriculture of the New Orleans trade area which was completed early in 1926. Studies in the cotton, rice, sugar-cane, truck, and dairy regions were made. In these regional studies attention was given to the factors involved in profitable production and to a comparison of practices of successful and unsuccessful farmers. The possibilities of profitable expansion of different enterprises were considered together with the limiting factors.

Study in New Orleans

A detailed study was made of the consumption of farm products in New Orleans, of the sources of supply of these products, and of the marketing facilities available. Local producers supplied only a very small part even of products that were produced locally, owing partly to the short marketing season for local perishables and to the inadequate local marketing facilities.

Efforts have been inaugurated since the survey was completed to improve local marketing conditions and to provide local growers with better news service and marketing machinery for handling the growing truck industry in the fertile bottom lands of the lower Mississippi.

Facts were assembled showing the trends of acreage and yields in regions competing with this area. Shipments to markets during the local shipping season were analyzed to show the competing shipping districts. Facts available on how Louisiana and Mississippi growers were meeting market preferences and requirements as to grading and standardizing, preparation for market, packaging, and shipping were assembled in the report of the survey. Data on usual values per acre and usual expenses of producing were obtained and presented to furnish growers a business basis for sound farm planning.

Milk prices in New Orleans were found to be low in comparison with other southern cities. Dairying has not been profitable and distributers have had to draw part of their supplies of whole milk for New Orleans from northern producing States. A study of producing conditions in the area supplying New Orleans with whole milk indicated returns for whole milk at certain times considerably less than the butterfat value on the local price basis. It was evident that there was room for a great deal of improvement in production

practices, but the poor soil conditions and unfavorable climate for growing and curing forage crops are disadvantages which are not easily overcome.

Business Organizations Cooperate

The survey was instigated by the agricultural bureau of the Association of Commerce of New Orleans. Cooperation of Louisiana State University and Mississippi Agricultural and Mechanical College was enlisted, and through these agencies the assistance of Federal department technical workers was obtained. The Shreveport (La.) Chamber of Commerce and many other public agencies, including railroads and the city of New Orleans, made material contributions. Reports covering various phases of this survey have been issued by Louisiana State University and Mississippi Agricultural and Mechanical College. A tentative summary was published by the New Orleans Association of Commerce.

An experienced marketing expert has recently been obtained by the New Orleans Association of Commerce to work with State and Federal agencies to bring about improvements, the need of which was indicated by the survey.

Another survey, along the same general lines, of the agriculture of Idaho is being carried on. The University of Idaho Agricultural Experiment Station and extension service and the State department of agriculture initiated the survey and staffs of these public agencies and Federal department workers in that State are studying the various situations. Eight of the county agents are actively cooperating in regional surveys to obtain basis for regional and county programs. A conference of university, State, and Federal department workers met with farm and business leaders and considered the tentative survey reports after the work had been under way six months. Regional and county economic conferences of a similar nature are to be held where the facts gathered on State and national situations will be presented to local farmers and business men and adapted to local conditions.

Idaho has no large consuming centers and is obliged to seek distant markets for most of its products. The distance from market necessitates production of commodities with high values relative to transportation expenses. With its large irrigated sections Idaho obtains high yields of potatoes, wheat, small seeds, and feed and forage crops. Dairying has expanded at a high rate in the past six years. The markets for Idaho products were given a great deal of study as were the trends of production in areas competing with Idaho.

B. H. Critchfield.

PROTEINS in Feedstuffs Vary Much The value of feeds and feeding stuffs depends largely on the protein they contain. In the market, feeds are frequently bought and sold on the basis of their protein content. Recent research has shown that the quality of the protein present in the feed is quite as important as the quantity. Of two sacks of feed, one containing 20 per cent of protein and the other 45 per cent, the feed containing 20 per cent may be an ideal ration, whereas the one con-

taining 45 per cent may be almost worthless. It all depends on the quality of the protein.

When protein is digested in the alimentary tract it is converted into some 18 or 20 substances called amino acids. It is these amino acids, not the intact protein, that are ultimately used by the animal for the formation of tissue. Certain of these amino acids are essential for the normal nutrition of animals, and not all proteins contain all of them. A protein, therefore, that is lacking in one of the nutritionally essential amino acids is greatly limited in its nutritive value. An animal depending entirely on such a deficient protein for its nitrogenous needs will not grow and develop normally, and

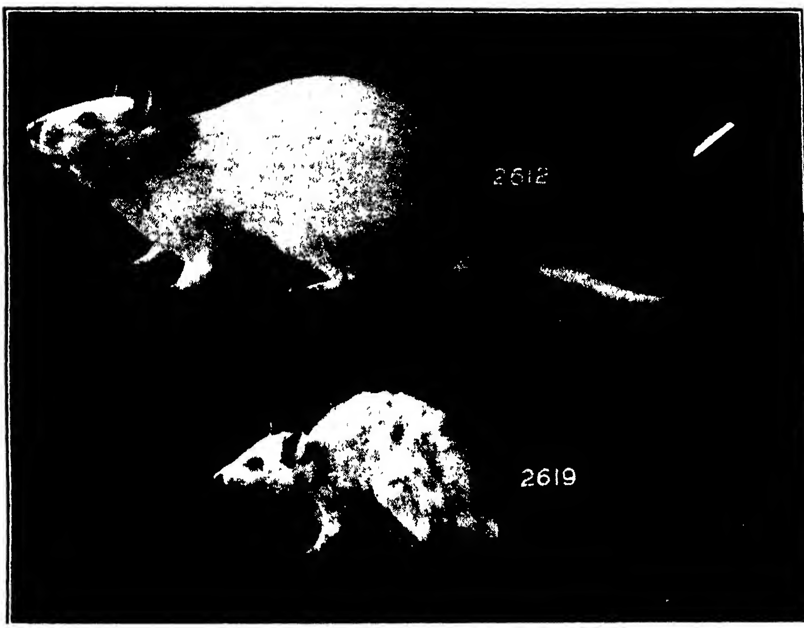

FIG. 186.—The effect on growth of the quality of proteins. A represents rat 2612; B, rat 2619. Both rats were practically the same age, and had been fed for 100 days rations the same in all respects with the exception that the ration given to rat 2612 contained protein of good quality, while rat 2619 received protein of poor quality. The protein of poor quality was deficient in the nutritionally essential amino acid cystine. The difference in the nutritive appearance of the two rats is striking. The one weighed 326 grams, the other 54 grams

will frequently die in a short time. Examples of such proteins are zein, one of the proteins of corn, and gliadin, one of the chief proteins of wheat, also the proteins of common navy beans, Lima beans, lentils, and cowpeas.

Figure 186 shows the contrast in the growth and appearance of two rats of the same age. One received a ration containing protein of good quality, the other, a ration the protein of which was deficient in the amino acid cystine.

Proteins in Cereals

Cereals constitute the most extensively used class of feeding stuffs. Nearly all of the cereals contain proteins which are soluble in alcohol. These proteins are called "prolamins." Gliadin from wheat

and zein from corn are the best-known examples. As a group, these proteins are of poor nutritive quality, because they are deficient in certain amino acids essential to growth. On the other hand, the proteins of most oil seeds, such as flaxseed, hempseed, sunflower seed, cottonseed, peanuts, and soy beans, are very satisfactory sources of these essential amino acids. In compounding rations with the idea of obtaining a mixture of proteins that will contain the amino acids in satisfactory proportions, it is well to remember that very little is to be gained, from the protein standpoint, by mixing different feeding stuffs of the cereal class, on account of the similarity of their protein deficiencies. Adding some of the seeds which contain in abundance the amino acids that are deficient in the cereals, however, gives a mixture that will be nutritively satisfactory from the protein standpoint.

Qualities of Bran Proteins

The wheat kernel consists of three parts—the endosperm, the embryo, and the seed coats or bran. The endosperm is the part of the wheat which is used for the manufacture of white flour. The proteins of the endosperm and embryo have been extensively studied by various investigators, but little has been known regarding the properties of the bran proteins. Approximately 22 per cent of the protein of the wheat kernel is contained in the bran—a quantity that represents a vast amount of protein in the annual wheat crop. In view of the importance of wheat bran as a source of protein, investigations were undertaken in the Bureau of Chemistry to obtain information regarding the chemical and nutritive properties of the bran proteins.

Practical feeders of farm animals have long known that bran is highly nutritive. It is generally conceded that it is fairly well digested by ruminants, which have digestive tracts adapted for the accommodation of coarse, bulky material, such as hay and fodder. As for its food value for animals other than ruminants, particularly for man, many conflicting views have been recorded, ranging from statements that it is wholly without food value, except for roughage or bulk, to statements that it is digested by man as well as by domestic animals.

The investigations conducted in the Bureau of Chemistry showed that the proteins of bran differ essentially from the corresponding proteins of the endosperm and embryo. The bran proteins, in contrast to the endosperm proteins, are high in their content of those amino acids known to be nutritionally essential. From these results it could be predicted with a fair degree of assurance that in actual feeding experiments the bran proteins would have a relatively high nutritive value.

Feeding experiments with albino rats (fig. 187) have yielded results which confirm the predictions based on the results of the chemical studies of the bran proteins. They have also demonstrated that the ability to digest and assimilate the proteins when supplied in crude bran is not limited to ruminants, as is frequently asserted.

A large number of young albino rats soon after being weaned were fed a ration in which the protein was supplied solely by wheat bran.

They grew at an excellent rate during the first 15 or 16 weeks, the period of the most rapid development of the rat, covering life up to sexual maturity. During this period of adolescent growth, the

FIG. 187.—Arrangement of cages for rats used in experimental feeding experiments. Each cage contains one rat. The animals are fed diets prepared with great care and which are known to be nutritionally adequate with respect to all of the known dietary factors with the exception of the particular one that is being tested. Records are kept of the weight of the food eaten daily by each rat. The animals are weighed twice weekly. All data are carefully recorded for each rat, from which the rate of growth and other criteria used for estimating the nutritive value of proteins can be studied

FIG. 188.—Rat 2375 received since the time it was weaned, a diet containing no protein other than that furnished by commercial wheat bran. At the time this picture was taken the rat had been on the bran ration for 88 days. During this period it had more than tripled its weight at the start of the feeding test. Note the sleek coat of fur and the animal's well nourished appearance

experimental rats manifested every indication of well being and of a state of satisfactory nutrition. (Fig. 188.) With the coarse, bulky bran ration no instance of digestive disturbance was observed.

The rate of growth in itself, however, does not constitute a sufficiently strong basis for the evaluation of the nutritive efficiency of proteins. We must also know how much of the protein is eaten, as no matter how excellent the quality of a protein may be, unless enough of it is eaten the animal can not grow satisfactorily.

A method commonly used in nutritional investigations to express the relative efficiency of a protein for promoting growth is to find out how many pounds or grams an animal will gain in weight for every pound or gram of protein eaten. In these experiments accurate record was kept of the food intake of the rats. It was found that during the first six weeks of the feeding tests the animal had gained an average of 1.83 grams for every gram of crude protein consumed as calculated from their food intake. Several gained over 2 grams. These figures compare favorably with those similarly obtained with other proteins known to have high food value.

Efficiency of Bran Protein for Growth

The efficiency of the bran proteins for growth as represented by these figures is from two to three times as high as that which has been obtained in similar experiments in which the proteins were supplied solely by the patent wheat flour of commerce.

After the period of rapid growth on the bran diet the animals have not shown the growth and development that is normal for mature animals. They have done but little better than maintain their weight. Several have lived, however, for a period approximating two years, about two-thirds of the normal span of a rat's life, on the ration containing no protein other than that supplied by the bran, and are still in fair condition. Rats receiving the bran diet have produced offspring, but have had little success in rearing them. Fecundity was low.

That the unsatisfactory reproduction and rearing of young may be attributed to the same dietary deficiencies as are accountable for the unsatisfactory rate of growth of rats on the bran diet after the first 14 or 15 weeks is an interesting possibility. The high efficiency of the bran ration for promoting early growth, and the unsatisfactory results obtained with it in connection with subsequent growth and reproduction, constitute a striking example of how the nutritional requirements of an animal may vary with the changing stages of its development.

Of course, the nutritive shortcomings of the bran ration used for the mature animals should not necessarily be ascribed to the quality of the bran proteins. They may be due to a lack of some nonprotein dietary factor or to some property of the bran which has not yet been discovered. A ration that supplies all of the nutritive needs of a young, growing animal may not be adequate to meet the requirements of that same animal after it has reached maturity.

It appears that wheat bran contains in abundance the factors that meet an animal's nutritional requirements during the period of its most active growth, but is rather deficient in some other factor or factors which are required for the mature animal's normal development. The proteins of wheat bran, when considered from the standpoint of both quantity and quality, should give this feeding stuff an important place in the ration of young growing animals. Its high percentages of certain nutritionally essential amino acids that are

lacking in several cereals, including corn, recommend bran as an excellent supplement to those feeding stuffs which contain proteins of poorer quality.

D. Breese Jones.

PROVING Dairy Sires Through Daughters' Records Worth While The cow-testing association as ordinarily conducted in this country is an organization of about 26 dairy farmers who employ a man to weigh and test the milk and to weigh the feed of each cow one day each month. From the daily records the tester computes the monthly and yearly records of every cow in each member's herd.

For more than 20 years such cow-testing association records have been used in this country to test dairy cows. They are now also being used to test dairy bulls, because production and income records of the daughters of the dairy bull, when compared with the records of their dams, test the bull as certainly as these records of production test the dairy cows.

Two bulls, born the same year in the same State, each had five daughters that completed yearly records in 1925. It was merely a coincidence that in each case the five daughters averaged exactly 350 pounds of butterfat a year when all records were figured to maturity. So far, it would appear that these two bulls were of about equal merit.

The next step in the investigation, however, showed a great difference. In the case of bull No. 1 the five dams had an average butterfat production of 381 pounds, whereas in the case of bull No. 2 the five dams had an average butterfat production of 178 pounds. Bull No. 1 lowered the production of his daughters 8.3 per cent, whereas bull No. 2 raised the production of his daughters 96.6 per cent.

Bull No. 1 was at the head of a herd better than himself. Perhaps he might have improved a poorer herd. Bull No. 2 was at the head of a herd of low-producing dairy cows. He rendered great service by almost doubling the average yearly butterfat production. Doubtless he would have improved a much better herd. It is not the records of the dams alone or the records of the daughters alone, but the records of daughters in comparison with those of their dams that make the story complete and valuable.

Sires That Win

Cow-testing records show that some purebred sires are fit to head high-producing dairy herds, that some are able to improve the average herd, and that some should never be placed at the head of any herd of dairy cows.

In a study of the records of the daughters of 100 purebred bulls in cow-testing association herds, it was found that approximately one-third of the bulls lowered production, that one-third raised production very slowly, and that the big production gains came from the other third.

To prevent inbreeding, almost all dairy bulls, regardless of their breeding, are sent to the butcher after they have been in the herd two years. This practice is robbing the dairy industry of tens of thousands of good bulls every year.

According to the 1920 census, only one-fourth of our dairy bulls were purebred. As has already been stated, cow-testing figures indicate that only about two-thirds of these are increasing production in our dairy herds. Correspondence with the owners of these herds shows that only about one-fifth of the high-class bulls are kept until the daughters prove their worth.

No one will complain because scrub and grade bulls are sent to the block at an early age, or because the purebred bulls that lower production are doomed to an early death. It is better that these bulls should go than stay, because from them no improvement can be expected.

It is unfortunate, however, that the good bulls, those that are capable of making great improvement in dairy herds, should be sent to the butcher along with the mediocre bulls and the scrubs.

One Every Eight Minutes

A careful estimate has shown that really high-class bulls are going to the butcher at the rate of about one every eight minutes from daylight to dark, every day in the year. How to stop this great slaughter and keep these bulls for a lifetime of service is one of the greatest problems in dairying to-day.

The cow-testing records are proving hundreds of dairy bulls, but very few of these are still alive when the results are available. As it is not worth while to prove dead bulls, some system of exchange should be started at once in order that well-bred bulls may be kept until the daughters have demonstrated their sire's true value. Eventually thousands of living bulls will be proved through the records of their daughters. From the extensive use of such purebred dairy sires a very great improvement in our dairy herds may be expected.

J. C. McDowell.

PUREBRED Livestock Markets

Millions of dollars each year are expended for breeding stock to improve the herds and flocks throughout the Nation. Records show that during the past century prices of purebred livestock have soared to remarkable heights in some years and then in a short time have fallen to discouragingly low levels. The only market guide available before 1922 to either producer or buyer was the publication of a comparatively few auction-sale prices in breed and agricultural publications.

That such reports should fail to serve as a real index of the market for purebreds was inevitable because only a part of the auction sale transfers were published. Furthermore, auction sales have always represented only a very small percentage of the number of animals that changed hands, as shown by the transfers of ownership appearing on the books of the breed record associations. Hence the bulk of sales, which furnish the only legitimate basis for market quotations, were disposed of at private treaty and such sales were almost never published. Under such circumstances it was impossible for either the present or the prospective breeder to gain even a fair idea of the real level of prices.

Not infrequently a prospective buyer would attend an auction sale and see an animal bring $700 which, so far as anyone could discover, represented the same type, color, breeding, and degree of excellence as one which his neighbor was offering at private treaty for $75. This caused much confusion, uncertainty, and sometimes loss, and worked to the decided detriment of the purebred industry generally, and especially in times of severe depression.

Purebred Livestock Price Reports

In view of this situation, the department began to gather and publish purebred livestock sale prices. The purpose of these reports is to give the prospective buyer, as well as the breeders who have animals for sale, an opportunity to know the average selling prices of a large percentage of the purebred animals sold throughout the country. To make the report truly representative the department gathers, compiles, and publishes prices realized at both auction and private sales. The data published are received direct from thousands of breeders scattered throughout the country.

At the beginning of each calendar year a questionnaire is sent to every breeder who during the year has registered five or more animals with his breed record association. On January 1, 1927, 45,000 breeders of cattle, hogs, and sheep were thus requested to report.

When the questionnaires are returned by the breeders the data contained therein are tabulated and averaged. The final report will show top and average prices for all of the important breeds segregated according to sex and age; also according to whether it was sold at auction or private sale.

With reliable data of this sort available it is possible for anyone to keep his finger on the pulse of the purebred industry and quickly discover any changes in trend of production, demand, or prices.

L. B. Burk.

PYRETHRUM Powder as Insecticide The use of insecticides, particularly arsenical preparations, for destroying potato bugs, grasshoppers, and fruit and cotton insects is well known, but few realize the enormous amount of money spent annually in the United States for materials used in the fight against household insects. One of the oldest and most extensively employed of these insecticides is insect (pyrethrum) powder, which consists of the finely powdered dried flower heads of certain species of Pyrethrum. We depend almost entirely for our supply of these flowers on foreign countries. Previous to 1914 most of the flowers came from Dalmatia, but during the World War this supply was cut off and Japan became our principal source of supply. Large quantities of Dalmatian flowers are again being imported, however, through the Italian port Trieste.

In 1920, the year of the maximum importation of insect flowers, nearly 7,000,000 pounds, valued at over $2,600,000, was brought in. During 1925 slightly over 3,800,000 pounds, valued at more than $1,000,000, was imported. The importation in 1926 will undoubtedly exceed that of 1920; during the first six months nearly 5,000,000 pounds, valued at about $700,000, was brought in. The price of these flowers has varied greatly. In March, 1920, it reached $1 a pound,

while in December, 1926, the wholesale quotations for insect powder were from 23 to 27 cents a pound and the import prices for the flowers decidedly lower. The present low prices may be accounted for by the fact that the 1925 crop, both in Japan and in Dalmatia, was very large.

The dried whole Pyrethrum flowers are shipped into the United States in bales and ground into insect powder in American mills. The powder has frequently been subjected to adulteration. The most common adulterants have been powdered Pyrethrum stems and powdered flowers of the oxeye daisy, which resembles closely the species of Pyrethrum flowers from which most of the insect powder is produced. Owing largely to the activities of the Insecticide and Fungicide Board of the United States Department of Agriculture, both of these forms of adulteration are practiced very much less extensively than they formerly were. This accounts in large measure for the great increase in the use of this product during the past 10 years.

Notwithstanding the fact that insect powder has been used for more than 100 years and has engaged the attention of chemists for more than 50 years, it was not until 1924 that the exact chemical composition of the constituents which are toxic to insects was announced. In 1924 two Swiss chemists reported that they had found that Pyrethrum flowers contain two highly toxic compounds. As these compounds are exceedingly complex in their structure and constitute only about 0.2 to 0.3 per cent of the flowers, it is not surprising that scientists were baffled for a long time. Efforts to synthesize these compounds have been unsuccessful.

Experiments conducted in the Department of Agriculture and reported in 1920 showed that certain organic solvents, including the lighter fraction of petroleum, completely extract the active principles of Pyrethrum flowers. Since that time there have been placed on the market many commercial preparations consisting essentially of light mineral oil, of the nature of kerosene, containing the active principles of Pyrethrum flowers. The sale of these products, used as sprays in the control of insects, particularly house flies, has reached extensive proportions, amounting, it is estimated, to several million dollars annually.

The Department of Agriculture is frequently asked why the United States does not grow its own Pyrethrum flowers, as the plant which bears these flowers is closely related to our common oxeye daisy. In former years insect flowers were produced commercially in California, and field experiments are now being made by the department to determine whether insect flowers of the required potency can be grown elsewhere in the United States at a cost which would permit their cultivation on a commercial scale.

C. C. McDonnell.

QUETTA Nectarine—A New Fruit of Indian Origin The nectarine has very aptly been called a peach with a smooth skin. Like the peach, it is a child of the Orient where, in some parts at least, it is more generally cultivated and used than it is in this country.

The Quetta nectarine (fig. 189) is one of the many plant immigrants brought to this country as a result of a systematic world

search for new and promising crops. Quetta is one of the outposts of the British Empire located in Baluchistan, northwestern India. Through the courtesy of an English army officer, the Office of Foreign Plant Introduction was enabled to obtain a number of fruit seeds from that country. Among the lot were a few nectarine seeds. "I am sending you these seeds," wrote the officer, "because it is about all I can find here. I am sure you must have better nectarines. The only point in their favor is that they stand cold and the trees do not get much water, as no rain falls here from April to December."

The records show that summer temperatures in the valley where Quetta is located frequently reach 100° F. in the shade, while in the winter they drop below zero, with severe frosts continuing for weeks at a time. The valley has an elevation of about 5,500 feet with an annual rainfall of about 10 inches. The seeds, which came as a small parcel post shipment, were planted at the Chico, Calif., plant introduction garden, and in due course a few small trees were produced from them. A few years later the seedlings bore fruit, some poor, some fair, and one very good. As fruits like the nectarine, peach, and plum do not come true or reproduce their kind from seed, it was necessary to propagate the good nectarine by budding. Buds from the selected tree were worked or made to grow on a Chinese wild peach stock known to be quite hardy, and thus good, strong, vigorous trees were obtained. In accordance with the usual practice, this new fruit was given seed and plant introduction (SPI) No. 34685. Later it came to be called the Quetta nectarine after the country of its origin.

Characters of Tree and Fruit

The Quetta nectarine, when grown on the Chinese wild peach stock, is a vigorous tree with compact head. It is a comparatively early bloomer and makes a handsome ornamental when the mass of flowers are at their best. The fruit is large for a nectarine, being from 2¼ to 2½ inches in diameter. The color is yellowish green, speckled and irregularly streaked with carmine. The skin is smooth and not easily broken, which adds to the shipping qualities of the fruit. The flesh is yellowish white and streaked with red near the seed, to which it clings. The fine texture and firmness of the flesh are especially noticeable; also its juiciness and sprightliness. A most striking feature is its rich aroma which lingers for a considerable time on the hands and whatever else the fruit has touched.

The Quetta nectarine has all the qualities of a first-class peach with the added advantage of having a smooth skin, handsome coloring, and a rich aroma. In the dietary then it will take the place of the peach, being especially agreeable when eaten out of the hand, or as a sliced breakfast fruit. Although no elaborate tests have so far been made in the drying and canning of this fruit, there appear to be no reasons that would preclude its use for those purposes.

The Quetta nectarine has been extensively propagated at the Chico plant introduction garden and distributed from there to all the States in the Union, except Maine, New Hampshire, and Rhode Island. The largest number of trees have been established in California, the records showing nearly 6,000 trees and more than 4,000

buds as having been placed in the hands of growers there. Something over 1,200 trees have been distributed in the Atlantic and Gulf Coast States, and several hundred more in Midwestern States. Practically all of the propagation has been accomplished by budding the trees on the Chinese stock already mentioned. This has, without doubt, added to the hardiness of the tree, as the Chinese wild peach is known to be more resistant to cold than the ordinary peach.

FIG. 189.—The Quetta nectarine. A promising new fruit from northwestern India. About two-thirds natural size. The skin is smooth and the flesh is sweet, sprightly, and as finely flavored as a high-grade peach

Commercial Production Reviving

The commercial production of nectarines practically ceased in California a few years ago, but is now coming to the front again.

The Quetta seems to be leading in this matter, records showing nearly 100 acres planted for commercial use. Its chief value to the California growers is found in its high quality, handsome appearance, and ability to stand long-distance shipments. The last is important, as most nectarines are poor shippers. From all the reports at hand the fruit would seem to have found a place in California as a commercial introduction. Throughout other sections, including most of the cotton-growing States, Missouri, Illinois, Indiana, Ohio, Kentucky, and Tennessee, this fruit would seem well worthy of culture in the home fruit garden and for small orchards where the products are for local consumption. It is believed that the Quetta nectarine has passed the experimental stage and might profitably be taken in hand as a promising commercial nursery product.

B. T. GALLOWAY.

RABIES Becoming More Prevalent in United States Indifference and lack of fear, together with misguided sentiment and distance from the scene of infection, are factors that may reasonably be held responsible for the prevalence and increase of rabies. Children probably make up the greatest number of victims in homes where rabid animals have been

kept as pets. If the malady actually affects a person, it is not curable; but it is preventable, in most instances, by proper vaccine inoculations.

Rabies among dogs, throughout the eastern part of the country at least, is on the increase. This, of course, results in a greater menace to man and to farm stock. There is need to overcome the apathy of the public as to the situation. To have general knowledge about a disease puts one on the alert for its presence. To have definite knowledge about it frequently means also the ability to avoid its occurrence or to prevent its spread should it appear.

Rabies is essentially an acute, degenerative disease of the central nervous system, due to infection. In this disease the functioning of the brain is utterly abnormal, resulting in an acute insanity. The disease in dogs is manifested either by an acute mania known as furious rabies or by a lethargic mania known as dumb rabies.

The disease in animals is practically always transmitted by the bite of an affected dog and by dogs affected with the furious form of the disease. The dumb form of rabies may be preceded by a more or less acute or furious form of the disease. There is the possibility, therefore, that any rabid dog at large, although having the dumb variety of disease, may have had opportunity to transmit the disease so that all dogs with which he may have been in contact should be regarded as possibly exposed and should be handled accordingly.

Symptoms Shown by Rabid Dogs

A dog that fairly suddenly develops defective vision, changes its usual attitude toward dogs and animals or man, that appears to have a bone in its throat, has inability to swallow, seems unusually snappish, runs away or is unable to run on account of apparent paralysis, exhibits fear or unusual aggressiveness, should be examined by a veterinarian in order that a diagnosis may be made and that proper precautions may be taken to forestall mischief. The symptoms mentioned above are often indications of the presence of rabies.

It is a duty in many research and public-health laboratories to examine the carcasses and brain tissues of animals, principally dogs, that are suspected of having been affected with rabies. When the disease is found, proper precautions may then be taken to prevent its spread by animals that have been exposed to the rabid one. Preventive treatment may be given by a family physician to persons bitten by the animal. Occasionally, preventive treatment is given to exposed dogs also. The examinations are for the purpose also of fixing quarantines for the protection of other dogs and domestic animals. Losses from rabid cattle, horses, sheep, and swine, in the aggregate, are large.

The large number of animal carcasses submitted for examination to the Bureau of Animal Industry laboratories in Washington, D. C., shows that the disease in this vicinity has been steadily and greatly on the increase. During the last year in the pathological laboratory of the bureau 289 suspected cases were examined microscopically for evidence of rabies. Of this number 146 were found to be positive cases of the disease. All these cases originated in Washington, D. C., or in the suburbs. This number is about three times as great as occurred four years ago. From other evidence also there is abundant proof of a rather general increase in many communities.

The number of dogs in the country without doubt is larger than at any previous time. This fact, together with the custom of allowing the dogs to roam at large without muzzles or other restraint, unquestionably explains in part the rabies situation of to-day, since the disease is transmitted from dog to dog or from dog to man and domestic animals almost exclusively by the bites of rabid dogs. In man, rabies may be accidentally transmitted in the laboratory by accidental wounds in which the rabies virus from a dog is being manipulated in examination; however, this is of rare occurrence.

If a person is bitten by a dog and rabies is suspected, tie up the dog (if this can be done safely) instead of killing it. This will facilitate diagnosis of the suspected disease. Consult a physician without delay.

JOHN S. BUCKLEY.

RADIO Aids in Distribution of Market News Broadcasting crop and market news reports by the radio stations of the country has been in effect since early in 1921. The greatest expansion of that service was in 1922. Beginning the year with authorizations to nine broadcasting stations to release market reports originating in the then Bureau of Markets and Crop Estimates the service grew till by the end of the year 81 stations were regularly releasing scheduled reports, and it was estimated that over more than half of the area of the nation daily reports could be heard by those having fairly good receiving equipment.

During 1923, 1924, and 1925 the area covered by the service expanded somewhat, particularly in the western half of the country. Some stations discontinued broadcasting, others merely changed their plans and discontinued the regular scheduled broadcasting of market reports. The losses to the service were small, and where a station of somewhat indifferent ability discontinued the service others that were more efficient were found to take up the work. During the three years that the service of market reports by radio was becoming stabilized surveys were made to obtain, if possible, some idea of the number of farm homes that were equipped with radio sets so that if market reports were wanted they could be obtained. The results of the 1923 surveys showed an estimate of 145,000 sets on farms; 1924 gave an estimate of 365,000, while in 1925 the number estimated was 553,000.

With an assured audience that was rapidly increasing the use of radio as a means of reaching the largest possible number of producers with the current market reports took its place in 1926 as a well-organized part of the market-news distribution machinery. Ninety-five stations carried regular programs during the year.

New Stations Added in 1926

Although the number of new stations added to the service during 1926 was small, being only eight in number, there were three rather important market-news programs set up to serve areas that were not being well supplied. At Hastings, Nebr., a complete market-news program was provided by the establishment there of a branch office

of the leased wire telegraph system of the bureau which made available all the market reports that passed over the western circuit of the system. Cooperation with local agencies, including the local chamber of commerce and the radio station KFKX, provided the necessary machinery for the handling of the reports. The radio station at Hastings is very powerful and the reports were heard over a wide area in Nebraska, Kansas, Colorado, Wyoming, Montana, and South Dakota. No less than 5,000 complimentary letters received in the first three months of the arrangement at Hastings proved that the material broadcasted was reaching farmers.

At Ames, Iowa, an arrangement similar to that at Hastings was made, except that the local cooperation was provided by the Iowa State College extension service and the radio station owned by the college. The leased wire was extended to Ames and broadcasting of the complete reports began in July, 1926.

Although the leased wire passed through Oklahoma there were no available cooperating agencies and satisfactory broadcasting station which could be obtained for the development of a radio market-news program. However, with the increase of the power and facilities of station KFJF at Oklahoma City and the increased interest of local agencies, arrangements were made for the establishment of a branch of the leased wire at Oklahoma City and the broadcasting of the information thus made available by the state marketing commission over station KFJF.

J. C. Gilbert.

Recreation for the Farming Population Various elements in rural society are according increased value to recreation. Education recognizes it through enlarged playgrounds, school athletic leagues, and the opening up of buildings to community use. Religion recognizes it by making recreation a part of its rural church program, both outside and inside the church building. Rural social organizations evidence its greater importance by promoting rural community field days, pageants, athletic badge contests, and athletic leagues, and by establishing community centers. Farm economic organizations demonstrate it by making recreation a part of their balanced community programs. Social and recreational cooperation is becoming a valuable building stone in economic cooperation.

Significant in rural recreation are recent Pennsylvania laws authorizing county and township boards of recreation. Chester County, under its superintendent of recreation, is training rural recreation leaders. Some of the results are development of athletics, neighborhood social evenings, new community halls, school recreation under leadership, provision for recreation at fairs, promotion of Christmas programs, and establishment of recreation clubs.

In Butte County, Calif., the county recreation director furnishes recreation programs to the recreation director of the farm bureau centers, organizes recreation evenings for farm bureaus and other organizations, organizes community players, community play days, Christmas festivals, farm bureau picnics, and Camp Fire Girl circles. Every farm bureau in the State has a recreation committee.

According to studies made, farm communities are taking advanced steps in both indoor and outdoor recreation features. The farm bureaus of Kendall and Whiteside Counties, Ill., Weber County, Utah, and three California counties formed baseball leagues. Farmers' outdoor swimming pools were constructed in Gage County, Nebr., and Phelps County, Mo. The farm boys' band of Harrison Township, Boone County, Iowa, and the boys' band organized by the grange at Concord, Minn., are examples.

History Taught in Pageants

Local history is taught and preserved through rural pageants. The rural people of Kittson County, Minn., presented five homemade, home-staged pageants one year. Eight farm bureau centers of Kern County, Calif., produced local plays in 1925 sponsored by the commu-

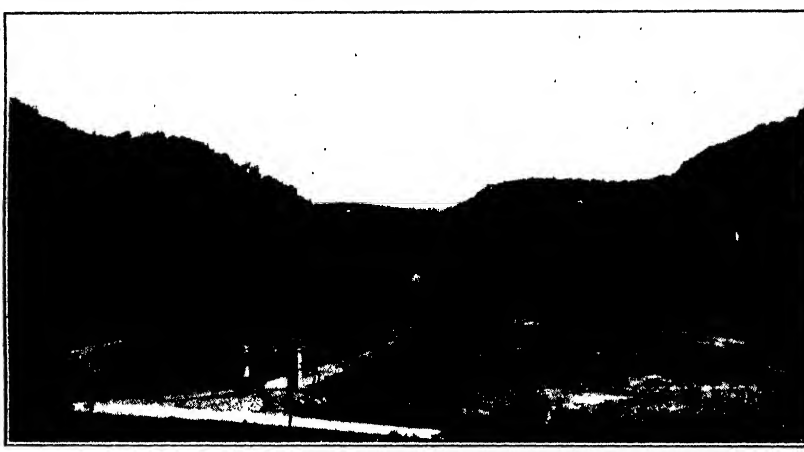

FIG. 190.—The 1926 picnic of the Winona County, Minn., farm bureau was attended by 8,700 people. Community picnic grounds, a tract of 27 acres, was donated to the farm bureau and has been equipped for picnics and recreation. More than 20,000 people attended picnics here during three summer months of 1926

nity theater committee of the bureau. In Iowa 149 township farm bureaus produced plays and 109 farm bureau debates were held.

The little country theater is strongly featured in North Dakota and New York. Farm bureaus in 792 Iowa townships averaged three showings each of moving pictures in 1924. An old farm barn was converted into a successful moving-picture house in Albemarle County, Va.

In Alabama in 1924 there were 21 boys' and girls' camps and 4 for women, each with a recreation leader. Recreation as a county demonstration project was featured in 16 counties in New York, including training schools for leaders and a three-day rural-dramatics institute.

Farmers' picnics on special farmer-owned picnic grounds are popular. The farm bureau picnic held in the picnic grounds of the Winona (Minn.) County farm bureau in 1926 was attended by 8,700 people (fig. 190). Rural people are establishing their own parks and playgrounds. A notable example is near Smith Center, Kans.

Rural indoor recreation is centered primarily in special community buildings found in most counties, or secondarily in churches or schools or club buildings especially planned for community recreation features.

In 1925 the Lewiston Park Community Club near Hopkins, Minn., procured the plans and specifications for a community building, prepared by the Department of Agriculture, and recently completed their building, financed by community entertainments. It is the home of the county branch library, Boy Scouts, boys' glee club, community chorus, boys' and girls' club work, women's home project course, and community club. Activities are local plays, suppers, dances, card games, and lectures by the county agents and others.

Department Bulletin Plan Used

The farmers of Fabius Township, Marion County, Mo., recently erected their building from floor plans published in Farmers' Bulletin No. 1173 through voluntary contributions of labor, material, and money. It is headquarters for the county agents, farm bureau, girls' sewing society, boys' pig club, ladies' musical society, community orchestra, glee club, baseball association, and other organizations, and has the usual social activities. The 25-room community building at Emden, Ill., population 462, was recently completed after inspection of the Brimfield, Ill., building, and publication of the plans in Farmers' Bulletins Nos. 1173 and 1274. It was financed by stock sales to 192 people and contributions of money and labor amounting to $50,000. Activities include motion pictures, Chautauquas, local plays, traveling theatricals, musicals, dancing, luncheons, lyceum courses, basket ball, indoor baseball, volley ball, and roller skating.

WAYNE C. NASON.

RED Clover Seed's Origin is Important

A Wisconsin farmer would not think of planting Missouri-grown seed corn, but until recent years clover seed has been judged solely by its purity and germination, irrespective of the place where the seed was produced. Extensive trials for several years past have shown, however, that clover seed is not always equally fitted to assure a successful stand, one that will not only live over winter but that will survive the attacks of disease organisms and, if medium red, produce two cuttings in the second season.

Assuming that the soil is fit for the growth of clover and that no unusual drought kills the young stand, the remaining important element in getting and keeping a stand of red clover is the seed. In the United States two factors tend to destroy a stand of red clover—one is severe winter weather, the other disease.

A winter of steady low temperature need not be hard on clover, provided the ground is covered with snow, and conversely a winter with alternate spells of severe cold and thawing weather may be much harder on clover than one of steady cold. From present information, the geographical limits of the areas where severe winters may be expected can not be exactly defined, but in general such

sections as Iowa, Minnesota, and New York have winters severe enough to cause destruction of clover, while in the Lake States, Ohio, Pennsylvania, and southward, clover does not commonly suffer from winterkilling due to cold.

The disease factor operates both directly and indirectly; directly in killing the seedlings or the plants after the June hay crop has been cut, and indirectly in weakening the seedlings so that they fall prey to other diseases or to winter weather, in which case the result is often ascribed to winterkilling alone.

Anthracnose Causes Damage

The disease which causes the damage, or at least by far the greater part of the damage, in the eastern clover belt is anthracnose. Two fungi are responsible for this disease, one most active in the southern part of the clover belt and known botanically as *Colletotrichum trifolii*, the other known as *Gleosporium caulivorum*, most active in the northern part of the clover belt. Since the most severe damage so far observed has been due to the southern form of anthracnose, *C. trifolii*, most of our information concerns the damage done by this organism. Although the external symptoms of the disease are alike in both cases, the fungi are different and behave differently toward temperature and other conditions.

Like all plants, red clover has tended to become adapted to local conditions and in the regions of severe winters the less hardy plants have been killed out and by natural selection a strain better able to endure the winters has developed. The consequence is that, when seed grown in Oregon or in Tennessee is sown in Minnesota, a larger proportion of plants are winterkilled than is the case when Minnesota seed is sown. Farmers in such sections, therefore, need to sow northern-grown seed. As far as trials have been made, no imported seed of any kind has been found to produce plants as resistant to Iowa or Minnesota winters as home-grown seed or as American-grown seed generally. In Iowa and Minnesota. 90 per cent or more of the plants raised from Italian seed and from 50 to 60 per cent of those raised from French and Chilean seed have been killed by cold, while in the same winter and on the same fields only 10 to 15 per cent of the plants from northern-grown American seed were killed. Russian red-clover seed has not been adequately tested. Farmers in any section where the winters are hard on clover or wheat should therefore use American-grown red clover seed and, if possible, that from the Ohio Valley, the Northern States, Iowa, or Canada.

Southern Form of the Disease

In the southern part of the clover belt, approximately south of an east-and-west line along the southern border of Pennsylvania, the southern form of anthracnose causes much loss of the young plants during the first season or kills the older plants after the June crop of hay has been cut. Clovers produced in various sections differ in their susceptibility to this disease, plants raised from seed grown in the South being usually less susceptible than those from imported or from northern-grown seed. Plants from Italian seed are more

susceptible to this disease than any others and many are commonly killed during the first year. Those that survive, if any, often die out during winter and the few that survive are sure to die after the first cutting. Plants of several of the best European strains, as Silesian and Bohemian, which are highly regarded in Europe, appear to be rather more susceptible than most French or Chilean strains, though plants of all imported strains, even Russian, are decidedly more subject to this disease than are plants from American seed. Figure 191 shows how a stand of clover which was good in August of one year disappeared before May of the next year. Plants from Oregon, Canadian, and Wisconsin seed have been found more susceptible than those from Ohio seed and in some cases the same has been true of Minnesota seed. In one case, however, the plants from Minnesota seed have been little injured.

FIG. 191.—Effect of anthracnose on the stand of red clover. Center, perfect stand of Tennessee anthracnose-resistant clover; left, plot seeded with Italian; right, that seeded with Bohemian seed. The plot in the foreground is seeded with Oregon seed. All plots had a good stand in early August, 1922

As far as tried, seed produced by plants grown in Virginia, Maryland, and in southern Ohio have withstood this disease better than any except those of the selected anthracnose-resistant Tennessee strain.

Practical Lesson Gained

The practical lesson from the information so far gathered is that in sections of severe winters American clover and preferably northern-grown seed should be used. In the southern part of the clover belt, an effort should be made to produce a local source of supply, preferably of a strain or of strains known to be resistant to anthracnose. Until such seed is available, seed produced in the southern part of the clover belt or in the Ohio Valley should be given preference.

A. J. PIETERS.

RED Clover Strains—How They Behave All red clovers are derived from the wild form of *Trifolium pratense*, a low-growing plant with branches lying nearly flat on the ground. From this, two main types have been developed—the single cut or late clovers, and the double cut. In the United States the single cut is known as mammoth, and the double cut as medium or June red.

These two types are distinguished mainly by the fact that the single cut is in full bloom two to three weeks later than the double cut and produces but one crop of stems in a year, while the double cut produces two crops of stems. The mammoth also has coarser and more hairy stems, but the development of this character depends

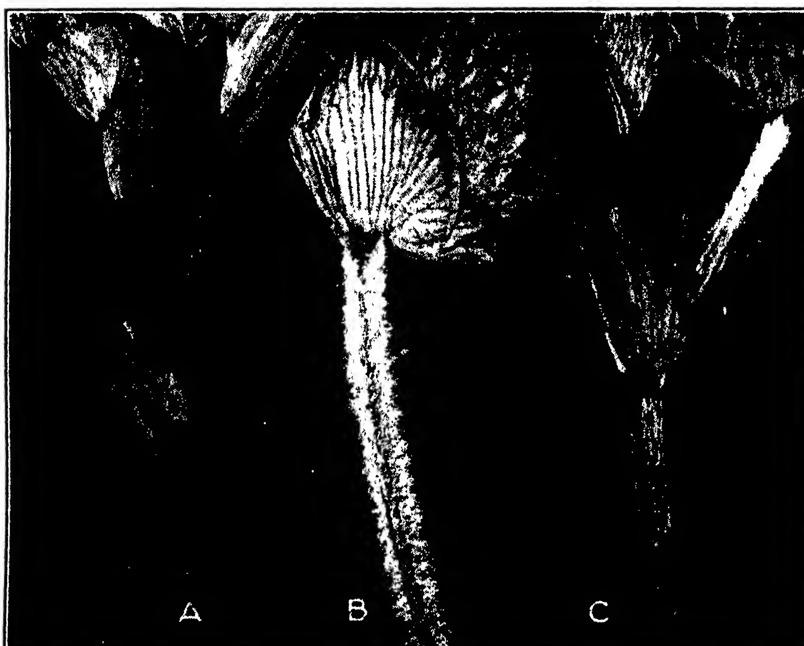

FIG. 192.—Young parts of red-clover stems showing characteristic hairiness. Enlarged to show hairiness. A, Italian, smooth. B, American, rough hairy. C, English, appressed hairy

somewhat on the soil and weather conditions. In the fall of the first year's growth the mammoth is lower growing and more compact than the medium red and rarely produces stem growth. True American mammoth is grown only in North America. Imported "mammoth" or "sapling" has, in the department's trials, invariably proved to be European double-cut clover. The American mammoth is a single-cut clover like the European single cut but is a very different strain, being coarse, strong growing, and very hairy, whereas the European type is smooth or with appressed hairs. The Altaswede, developed in Alberta, Canada, is a very good hardy type of European single-cut clover.

While these two main types, single and double cut, are common to red clovers in Europe and in America, the American type, though

derived from the European, has developed characteristics of its own by which it may nearly always be known.

American Red Clovers Hairy

The American red clovers, whether single or double cut, are hairy, and the hairs stand at right angles to the stem (fig. 192). The stems are relatively coarse and the flower heads larger than those produced by European clovers, at least under American conditions. The European clovers are either nearly or quite as smooth as the Italian or the hairs lie flat against the stem and point up, as in English and French clovers. There is some variability in this character of hairiness, the American clover sometimes being very hairy and sometimes little hairy, but the characteristic appearance of the hairs can nearly always be seen on the young parts of the stems, especially just below the flower heads. It is very rare to find a plant of genuine American clover with smooth stem or with the hairs appressed to the stem. When such plants occur in numbers in any field it is certain evidence that mixed seed has been sown.

Besides the above characters visible to the eye, American clover is in America more winter hardy and more resistant to disease than the European type of whatever origin so far tested. Russian clovers have not yet been thoroughly tested. South American clover, at present imported only from Chile, is of the European type.

One American strain, the Tennessee anthracnose-resistant clover, has been selected for resistance to this disease, but in appearance is precisely like other American clovers. American clovers, whether grown in Canada or in any of the United States, are all alike in appearance, though there is some evidence that they are not all equally hardy or resistant to disease.

A. J. Pieters.

REINDEER in Alaska Thrive and Multiply

A third of a century ago there were no reindeer in Alaska. To-day more than 350,000 are grazing on the ranges and more than 100,000 additional have been utilized for a generation's food and clothing. Such surprising production in a comparatively few years indicates something of the vastness of the infant reindeer industry in our Arctic regions.

The original stock of 1,280 reindeer, from which have come the present herds, was imported from Siberia over a period of 10 years beginning in 1892, under the direction of the Bureau of Education of the Department of the Interior. That bureau also brought Laplanders from northern Europe to instruct the Eskimos in their new mode of gaining a livelihood, but the Lapps lacked the knowledge of coping with the parasitic and other diseases that began soon to develop among the animals.

About two-thirds of the reindeer are now owned by natives and one-third by whites. The latter, realizing the need of expert assistance for the welfare and improvement of the herds, especially as evidences of deterioration became manifest, appealed to Congress for aid, with the result that in 1920 an appropriation was made for necessary investigations by the Biological Survey.

From the outset both the Eskimo and the white owners have taken the greatest interest in the reindeer investigations and are rapidly adopting the recommendations that have been made by the parasitologists, veterinarians, and grazing experts engaged on the work. To give a clear idea of the accomplishments and the work still in progress, the problems studied may be conveniently grouped under four heads, having to do with improvements (1) in the control of diseases and parasites; (2) in the condition of the herds and methods of herd management; (3) in grazing and range management; and (4) in facilities for transporting carcasses and marketing the meat.

Determinations have been made of the parasites and diseases of the reindeer and of successful methods of control in many cases. The studies are still in progress.

FIG. 193.—Lapp woman driving sled reindeer in Alaska. The line for guiding the reindeer is shown leading back to the sled. Lapps came from Europe at the time reindeer were first brought from Siberia to instruct the Eskimos in their new industry

Herd Requirements Studied

The requirements of herds of increasing size have been investigated and practical methods are being worked out for handling reindeer on the range, at round-ups, and at the times of counting, marking for ownership, and castration of surplus bulls. Open herding and seasonal changes of pasture are being adopted, following recommendations of the investigators, and in round-ups the use of modern corrals with wing fences, chutes, and squeezes are found far superior to the rough and crude practices formerly followed. Castration methods are now employed with exceedingly beneficial results, compared with former barbarous customs. On Nunivak Island cross breeding with the larger caribou, captured on the upper Yukon and transported there for the purpose, is under way, and the animals produced should be larger, more stocky, and superior meat producers, and have fewer accidents from broken bones.

The range itself has received a full share of study, and as a result the distribution and abundance of the lichens are being ascertained as a requirement for the conservation of lichen areas for winter use.

The summer and winter grazing needs of individual herds, whether large or small, the yearly carrying capacity in different sections, and the delimiting of unit areas are being worked out. Recommendations also have been made for preventing the destructive fires that threaten seriously to curtail the grazing capacity of the ranges.

Studies are being made to determine the most satisfactory methods of slaughter and of dressing reindeer carcasses for shipment. These include the improvement of cold-storage and transportation facilities and the establishment of grazing units near waterways or along the Alaska Railroad or other arteries of travel. It is fully realized that for its highest development the reindeer industry must have facilities for marketing the meat and that these must keep pace with the increasing numbers of reindeer. Officials of the Alaska Railroad are cooperating heartily in solving this problem.

FIG. 194.—Reindeer held on winter range. Part of more than 350,000 reindeer on Alaskan ranges, the offspring of the original 1,280 animals introduced about 30 years ago. In the foreground are shown a reindeer owner, a herder, and one of the dogs used in corralling the reindeer

Experiment Stations Maintained

Reindeer experiment stations have been maintained by the Biological Survey from the very beginning of these investigations, and arrangements have now been made for conducting the experimental work from a station near Fairbanks, in cooperation with the Alaska College of Agriculture, with a substation possibly at Broad Pass, on the Alaska Railroad. All former investigations will be continued, including experiments in feeding grains and other rations, with a view to developing sled reindeer able to transport freight and supplies in areas where lichens are not available.

E. W. NELSON.

REPORTING Service on Markets Is Country-Wide The collection and distribution of "to-day's markets to-day" by the market news service of the Bureau of Agricultural Economics was extended during 1926 by the addition of five collection points and two distributing points.

The department now has a total of 35 offices outside of Washington, extending from Boston on the east to Jacksonville on the south,

and to San Antonio, Tex., and San Francisco on the west. The system now comprises nearly 8,000 miles of leased wire which is operated each market day, supplemented by a large use of commercial wires, in collecting information on shipments, receipts, and prices, etc., from field stations.

The service now covers in a comprehensive way the following staple agricultural products: Livestock and meats, wool, fruits and vegetables, dairy and poultry products, hay, feed and seeds, cotton, and a weekly review service on grains. Farmers and others who desire to receive the market news reports issued by the bureau may write to their nearest branch office as shown on accompanying map (fig. 195), or to Washington. This market news service now fur-

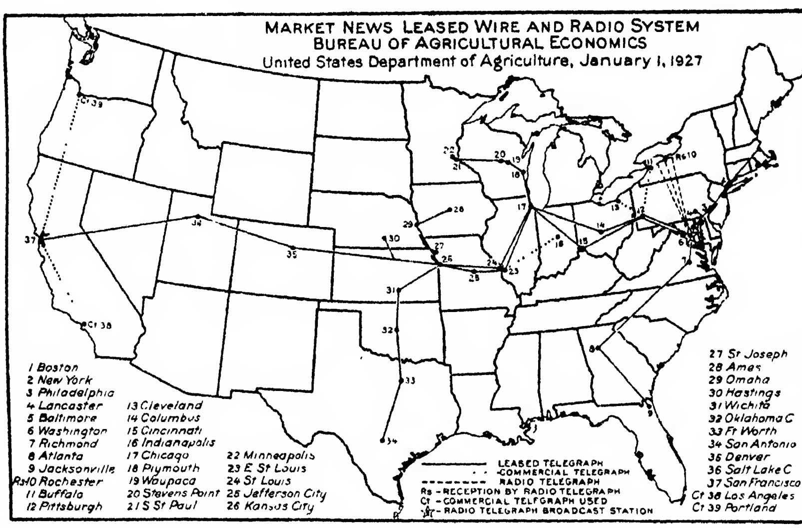

FIG. 195.—Location of stations having the market news service of the Bureau of Agricultural Economics

nishes the principal part of the market news and reports used by news associations, the farm press, country newspapers, and for radio broadcasting.

J. CLYDE MARQUIS.

RESEARCH Pays Dividends in Unforeseen Ways It is often difficult to determine in advance what is and what is not worth while in scientific research. This fact occasionally causes the suggestion to be made that research work should be tested by its immediate utilitarian results. Such a standard of values would be entirely inadequate. Frequently the simplest and apparently the most unimportant observations turn out to be of great value. This has been so often demonstrated that it is never safe to call a scientific discovery useless, no matter how hard it may be to imagine any practical application for it. New truth generally proves useful eventually. The history of scientific conquests is full of instances. A good example is the way in which the Bureau of Plant Industry of the United States Department of

Agriculture found uses for an apparently unimportant discovery made nearly half a century ago by Karl Wilhelm von Nägeli, a brilliant Swiss-German botanist, in the course of a study of one of the fresh-water alga belonging to the genus Spirogyra, popularly known as "green slime" or "frog spittle."

This alga grows in ponds and slow streams and looks to the naked eye as fine, long, green silk thread. Under the microscope, the thread is made up of cylindrical-shaped cells placed end to end, with spiral bands of green cholorphyll and the protoplasm and nucleus showing clearly. It is thus easy to see the living cell in operation and von Nägeli planned to study its life processes under the microscope with the hope of learning just how they took place. He prepared aquaria with carefully compounded food solutions required by the Spirogyra, but after repeated trials he could not get the alga to grow. However, when he brought water in from the spring they grew beautifully. Here was a question, apparently not of great importance, but he wanted to know why the alga would not grow in his synthetic solution. To make a long story short, he finally traced it to the water which he drew from a bronze faucet in his laboratory and then to the faucet itself. He discovered that the water passing through the bronze faucet took up enough copper from the bronze to kill the Spirogyra.

Copper Solution Killed Algæ

After repeated tests he found that 1 part of copper in 50,000,000 parts of water was sufficient to cause the green spiral chlorophyll band to contract, turn brown and, later, the cell to die. This phenomenon he described as the oligodynamic effect of copper on Spirogyra. It opened up a new field of study as to the physiological effect of dilute poisons and their selective effect. Most plant and animal tissues would not react at all to such dilute solutions. The facts were printed in a small report. They were considered of scientific interest, but probably of no practical importance.

About 20 years ago the Bureau of Plant Industry received a letter from a cress grower up in the Alleghany Mountains asking help in controlling a pest that was destroying his cress. Cress growing in the district was quite a well-developed industry, representing large investments. The bureau sent a physiologist to examine the trouble. The pest proved to be Spirogyra. The conditions in the cress ponds were so favorable for the growth of the alga, as well as the cress, that the former smothered out the latter. In seeking a remedy, the work of von Nägeli was recalled and tests of copper sulphate, 1 to 50,000,000 parts, were tried. This small quantity completely destroyed the Spirogyra without in any way harming the cress. At a cost of a few cents this pest was easily controlled. Here, then, was demonstrated a highly practical result of work, which, at the time, appeared to be of no value, at least from a dollar and cents standpoint. The use of this knowledge is saving the cress growers many thousands of dollars annually.

The remarkable results obtained suggested that copper might be used to control other forms of algal infections of city and town water supplies. Certain forms of algal growth made the water in

large city reservoirs almost impossible to use at certain times of the year, causing not only great inconvenience, but great loss, as it was impossible to control the trouble. As a result of these investigations, it was found that all of these pests could be eliminated at small cost and with absolute safety to the users of the water. This saved not only many millions of dollars a year, but greatly added to the health and comfort of those who used the water. Hundreds of supplies were cleaned up, not only in the United States, but in foreign countries.

Mosquito Larvæ Killed Also

During this work it was discovered that the larvæ of certain species of mosquito were destroyed by these copper treatments, which also destroyed algal growth. A method of destroying these pests was, therefore, at hand that could be used in water supplies, including tanks, wells, and cisterns where it was not practicable to use oil. The method was used with great success in a yellow-fever outbreak in New Orleans and later during the construction of the Panama Canal.

During these studies it was observed that certain species of bacteria, which are, in fact, microscopic plants, were also destroyed by these dilute solutions of copper. Careful studies were therefore made of the effect of copper on pathogenic species like those causing typhoid and paratyphoid fever and Asiatic cholera. It was discovered that they were highly sensitive to copper and could be cleaned out of a water supply as easily as the algæ without the slightest danger to the users of water, if properly applied. Water supplies contaminated with typhoid were disinfected and made perfectly safe at small expense and the method has now become a standard sanitary engineering procedure.

As a result of this work the use of chlorine was similarly standardized and has also become a standard treatment for infected supplies. The copper treatment has been used in India, China, and the Philippines for disinfecting supplies contaminated with Asiatic cholera organism and amoeboid dysentery organism. The value of this is almost beyond computation. It may fairly be said to be the outgrowth of von Nägeli's studies so many years ago. It demonstrates how important it is to make such studies, even though they may not at the time appear to be of practical value. If von Nägeli had not asked the question, "Why do my algæ die?" and worked till he found the answer, we might never have had the knowledge we now possess.

One other example will be all that space permits. In 1883, a French botanist, Millardet, was studying a fungous disease of the grape, or the "vine," as they call it in France. He had some trouble in keeping the boys from stealing the grapes, and to scare them off he sprinkled on the vines a mixture of copper and lime, which made a bluish coating on the leaves and fruit. The boys thought this was poison and let the grapes alone. Millardet noticed, to his surprise, that the leaves and fruit on which he had sprinkled this copper and lime mixture were free from the disease, while the parts not treated were destroyed by the disease. This led to the discovery that dilute solution of copper destroyed the fungus causing the disease without in any way injuring the vine or the fruit.

From this discovery of Millardet was developed our modern knowledge of Bordeaux mixture and its uses in controlling fungous diseases of fruits, vegetables, and plants in general, saving hundreds of millions of dollars annually.

Research in other fields such as soils, fertilizers, plant breeding, animal breeding, animal diseases, insect pests, chemistry, meteorology, forestry, nutrition, and economics has yielded and is yielding and promises to yield facts of great possible value. We can not afford to lessen our efforts in research, but we must increase them if we are to meet the demands of the future. No investment made by the Federal Government and the States has paid larger dividends in the past and none is likely to give a larger return in the future.

The Scientific Method

Some one has said that research is the golden key that opens the portals to progress. It is the constant aim of all educational agencies to cause the human mind to develop in such manner that it may learn how to distinguish truth from error and how systematically to go about the job of finding the truth. This is research, and the method is the scientific method. It may be applied to the simplest things about us or to the most complex problems. It always proceeds from the known to the unknown. The known factor, to begin with, may be the merest clue, apparently worthless, but if it is the only known fact it must be the starting point to gain others through the processes of observation, analysis, and experiment or testing. These processes are frequently very slow and expensive, but there is no royal road to truth.

If we would know the truth we must be ready to make the sacrifice necessary to find it. The history of science is full of romance and self-sacrifice. Because of this spirit our modern world enjoys a well-being not dreamed of as possible, even to the most fortunate. Our knowledge of chemistry, physics, biology, geology, astronomy, and mathematics gives us a control of ourselves and of our environment that was undreamed of a few centuries ago. Still, we are only on the threshold of great new realms of knowledge and power to come within our grasp through the patient continuance of research.

A. F. Woods.

ROTATION a Sure Way to Reduce Production Cost If you had land which produced low yields as the result of exhaustive one-crop farming would you simply buy fertilizers and continue the one-crop system, or would you diversify and practice a good rotation of crops? To be sure there are other decisions you can make; but to decide wisely in profitable soil management, you must know certain facts, among which are the following:

A one-crop system of farming ultimately leads to disaster.

Diversification and crop rotation lead to well-organized and profitable farming.

Soil productiveness can best be maintained when intertilled, small-grain, and leguminous or grass crops are grown in the order named and in recurring succession on the same land.

The largest crop yields are possible only when crop rotation and the use of manure or fertilizers are practiced together.

Crop rotation increases the returns from farm manure and fertilizers; and manure, fertilizers, and lime increase the returns from rotation.

Crop rotation does not cost any money, but it rivals the use of manure and fertilizers in maintaining and increasing crop yields.

A good rotation is a most effective means for increasing yields and lowering crop-production costs.

WILBERT W. WEIR.

ROUNDWORMS of Swine Prevented by Sanitation Although it has long been known that the large intestinal roundworm (*Ascaris lumbricoides*) is one of the commonest and most injurious of the parasites that infest swine, the precise nature of much of the damage caused by this worm has been discovered only during the last 10 years. Up to about 10 years ago ascarids were considered to be injurious to swine largely because they were known to produce various digestive disturbances, to interfere with growth and development, and to bring about unthriftiness in other ways, especially among young pigs. Their greatest threat to life and one outstanding capacity for doing harm were brought to light, however, when their life history was fully determined.

Before 1916 the life history of *A. lumbricoides* was thought to be comparatively simple. It was known that the eggs produced by the female worms were discharged into the intestine of the pig and passed out with the droppings. Under favorable conditions the eggs were known to complete their development on the ground in about two weeks, at the end of which period each normal egg contained a small, coiled larva. On the basis of knowledge then existing it was believed that if the egg was swallowed by a pig, the larva contained in the eggshell would be liberated in the digestive tract, would remain in the intestine, and grow slowly to maturity.

These eggs of the roundworm were also known to be very resistant to unfavorable conditions and to be able to withstand more or less drying and other seemingly injurious effects to which they might be subjected in nature. On account of this marked resistance of the eggs of the roundworm, the problem of preventing infestation of pigs with ascarids was regarded as a very difficult matter.

Earlier Views Modified

As a result of discoveries first published in 1916, previous conceptions regarding the life history of these parasites became considerably modified. It was first shown by F. H. Stewart, a medical officer in the British Army, and later confirmed and considerably extended by the late B. H. Ransom and others, that the young worms after hatching in the digestive tract do not settle down at once in the intestine, as had been believed.

It was found instead that the young worms enter the blood stream and are carried by the circulation first to the liver and then to the lungs. It was further discovered that the young worms make their

way from the lungs to the windpipe by upward migration, thus reaching the back of the mouth, from which they come down again through the esophagus and stomach into the intestine, where they settle down and develop to maturity. The roundabout journey of the young worms through the blood stream and the air passages requires about 10 days for its completion, after which their growth to maturity occurs in about 10 weeks.

In passing through the lungs the young worms were found to injure that organ, and if many worms passed through at the same time, a serious pneumonia was produced, which frequently terminated in death. These observations were first made on small, laboratory animals, such as mice, rats, and guinea pigs, and later on pigs. In the course of experiments with pigs it was found that animals did not fully recover from the setback that they received as a result of the lung injuries produced by the migrating young worms. They became stunted and in many other ways failed to develop at a normal rate.

Observations on lung troubles in pigs as a result of the migrations of young roundworms were first made on animals experimentally infected with ascarid eggs in the embryo stage. In these experiments it was found that very young pigs, from a few days to a few weeks old, were most susceptible to infection with the worms and that they suffered more severely as a result of it than did older pigs. Pigs several months old or older were found to be only slightly, if at all, susceptible to infection with the roundworm.

Observations on lung trouble in pigs due to migrating ascarid larvæ were soon extended from pigs used in experiments to pigs on farms, that had acquired a natural infection with roundworms. In naturally infected animals, a form of lung trouble commonly known as "thumps" was found to be due in many instances to ascarid larvæ going through the lungs, thereby affording a sound explanation for this condition which had previously been explained by various theories now known to be inaccurate for a large proportion of these cases.

Method First Tested in McLean County, Ill.

On the basis of these newly discovered facts concerning the life history of the large intestinal roundworm of swine, the Bureau of Animal Industry, through the efforts of Doctor Ransom and his coworkers, devised a method of preventing losses among swine by keeping down the infection with these parasites. Because the method was first tested under actual farm conditions in McLean County, Ill., it has come to be known as the McLean County system of swine sanitation.

Essentially the method consists in keeping young pigs away from old hog lots and other places that have been exposed to contamination with swine manure, and away from older and infected animals, other than their mothers, until they are old enough to have developed a resistance to the roundworms. In actual practice it has been found that pigs 4 months old are highly resistant to ascarid infestation, and if raised free from worms up to that period they will continue to develop normally.

The method of handling sows and pigs so as to reduce infection with roundworms is briefly as follows:

Before farrowing time all litter is removed from the farrowing pens. The sides and floors of the pens, which should be of sanitary construction, are thoroughly scrubbed with boiling water and lye. (Fig. 196.) Before being placed in the clean pens and several days before farrowing, the sows are washed with soap and water, particular attention being paid to washing the udders thoroughly. This removes, for practical purposes, the worm eggs and disease germs which may be swallowed by the young pigs with the first few mouthfuls of milk. After farrowing, the sow and pigs are not allowed out of the farrowing pens until they are taken to pasture. When the pigs are about 10 days old the sow and litter are hauled to pasture in crates on a sled which may be backed to the door of the

FIG. 196.—Cleaning farrowing pen. Note guard rail which aids in saving pigs. Following cleaning of the pen, it is disinfected and the sow is washed thoroughly. Thus the pigs when born have slight chance of acquiring roundworm infection

pen. (Fig. 197.) The pasture should not be a permanent pasture, but one that has been under cultivation and sown at the proper time to a suitable forage crop, preferably a legume crop, and no other pigs should be allowed access to it. The pigs are thus kept away from contamination until they are at least 4 months old, after which they are not likely to suffer seriously even though exposed to worm infestation.

Prevents Other Filth-Borne Diseases

In actual practice if pigs are reared in accordance with the precautions outlined above, they not only escape infestation with the roundworm, but they are also likely to escape many other filth-borne diseases, such as bullnose, sore mouth, and certain forms of diarrhea. This system of swine management should not be depended upon as a preventive of hog cholera, and hence hog-cholera immun-

ization should be continued in accordance with the approved methods of hog-cholera control.

When the system of raising swine so as to reduce roundworm infestation was first put to an actual test under farm conditions in McLean County, Ill., 20 farmers cooperated during the first year. During the third year about 10,000 pigs were raised in the same county under this system. In 1925 more than 600 farmers in 61 counties in Illinois used the system and reported that they raised more than 90 per cent of their pigs. The pigs averaged 7.1 pigs per litter when 4 months old, in comparison with litters averaging 5.1 pigs when raised without precautions to reduce roundworm infestation. The average weight of pigs raised under the sanitation system in 1925 in McLean County was 96 pounds per head when 4 months

FIG. 197.—The sow and young pigs are hauled to a pasture recently sown to a suitable forage crop, and no pigs from worm-infected lots are allowed in the pasture

old, whereas pigs of the same age raised without special regard to sanitation averaged only 68 pounds per head in the same localities. In 1926 about 1,000 farmers in 78 counties in Illinois, about 200 farmers in Nebraska, and many farmers in Iowa and in other regions in the Corn Belt were raising pigs in accordance with the plan described. This system of swine management is now being experimentally developed in the South by the Bureau of Animal Industry.

Briefly the results have demonstrated that enormous losses among pigs, caused by deaths in infancy and by stunting as a result of disease early in life, are preventable by a feasible system of sanitation. This has had a beneficial effect on the swine industry by restoring the confidence of farmers and has convinced them that swine management based on sanitation is a successful and profitable undertaking.

BENJAMIN SCHWARTZ.

SAUSAGE—the Real and the Imitation Kinds In preparing the carcasses of meat animals for the market, there are produced large quantities of materials which are best utilized in the form of sausage and other prepared products. Conversion of such materials into a tasty and nutritious product such as sausage is not only an important source of profit to the establishment but is of economic importance and of substantial benefit to producer and consumer alike.

There are, however, certain practices connected with the manufacture of sausage and meat food products which are of doubtful benefit to the producers, the consumers, or even to the manufacturers themselves. These practices involve the manner of utilizing organs and parts possessing inferior palatability and food value, the use of flour and other binders, the addition of excessive water, and the dyeing of casings.

Since the ingredients of sausage and other products resembling sausage, such as "imitation," are ground fine, it is possible to utilize, without ready detection by consumers, a considerable proportion of organs and parts not commonly used for food as such. Organs and parts of this type are not recognized as meat in the true sense of the term but as "meat by-products." By chemical analysis such organs and parts are found to contain somewhat less protein and considerably less fat than is contained in meat. Their food value is inferior to that of meat for the reason that their protein is largely incomplete and can not, therefore, be used in its entirety for the repair of body waste or the building of new tissue.

Why Cereals and Water Are Added

On account of lack of flavor and lack of suitable binding qualities it is not possible to make from meat by-products an article simulating sausage which is acceptable to consumers without the use of a certain proportion of meat. By the addition of cereal or vegetable flour as a binder the proportion of meat by-products may be increased. When meat by-products are used in any large proportion it is also necessary to incorporate a considerable quantity of water in addition to that normal to the meat and products used in order to make a product of acceptable consistence. The addition of flour and water can not be detected by ordinary physical examination, although the appearance of smoked and cooked products differs from that of sausage made wholly from meat in that the imitation product does not develop that rich color in smoking which is characteristic of sausage consisting of meat. With the application of artificial color to the casings this difference is made to disappear.

Sausage of good grade made wholly from meat may be expected, therefore, to contain more protein, more fat, and less added water than the product made in part from meat by-products and containing cereal as a binder. The difference in food value is greater than that shown by analysis on account of the fact that the proteins of the high-grade product are complete proteins and can be utilized by the body for the repair of waste and the building of new tissue, while the proteins of the inferior product are in part incomplete and therefore are not utilized by the body to the best advantage.

Comparison of High-Grade and Imitation Sausage

It is contended by some manufacturers that the utilization of organs and parts not commonly used for food of and by themselves together with cereal and large quantities of added water is justifiable because it furnishes a supply of wholesome and nourishing product at a low price to consumers who can not afford to purchase meat. In

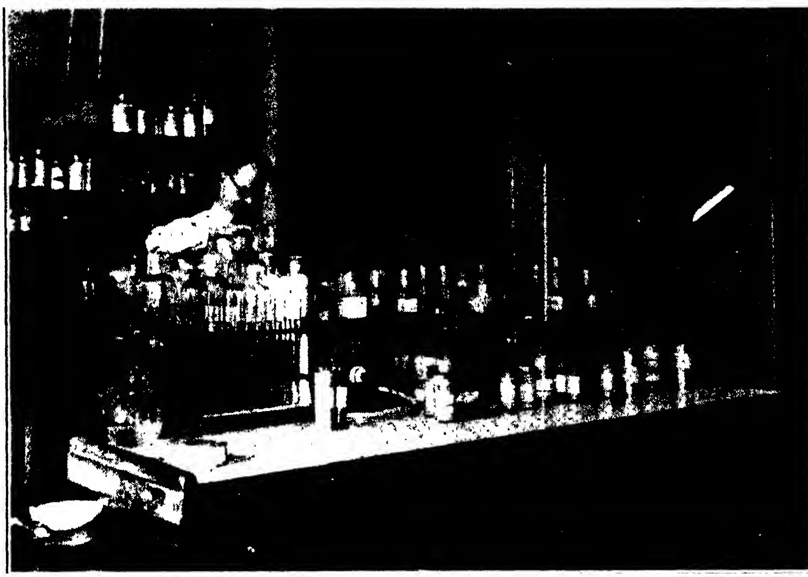

FIG. 198.—Portion of a Federal meat inspection laboratory. Trained chemists readily determine the true value of many meat products and ingredients submitted for analysis

view of this contention the following comparison of five typical samples of Frankfurter-style sausage of the highest grade and nine typical samples of product made in imitation of Frankfurter-style sausage illustrates the doubtful degree to which the manufacture of imitation product is beneficial to the consumer:

TABLE 21. —*Comparative cost and value of Frankfurter-style sausage and of "imitation"*

Item	Genuine Frankfurter-style sausage; average of 5 samples	Product made in imitation of Frankfurter-style sausage; average of 9 samples
per pound	$0 098	$0 052
Selling price:		
Wholesale do	$0 24	$0 17
Retail do	$0.32	$0 25
Analysis:		
Moisture per cent	56 4	65 4
Fat do	24.3	12.1
Protein do	14.5	13.3
Added water do	1.2	12 1
Calories per pound	1,259	813
Cost of 1 ounce protein:		
At wholesale price	$0.109	$0 079
At retail price	$0.136	$0.113
Cost of 100 calories:		
At wholesale price	$0.019	$0.021
At retail price	$0.025	$0.031

Comparison of the results of chemical analysis shows that the difference in the percentage of protein contained in the two types of product is not great. The high-grade sausage has a slight advantage in the actual proportion of protein but this advantage is not enough to overcome the difference in the selling price. The cost of an ounce of protein in the form of imitation product is slightly less than in the form of genuine sausage. Comparison on the basis of protein alone is not fair to the high-grade product, since the imitation product contains a substantial proportion of incomplete protein which is of less food value than the complete protein in the high-grade product.

Superior Product Shows Its Worth

The percentage of fat in the genuine sausage is more than twice that in the imitation product. This difference is further shown by the comparison of calories per pound and cost of 100 calories. It may be noted that the sums of the percentages of water and fat in the two classes of product are nearly equal, as also are the sums of the percentages of fat and added water. This shows substitution of water for fat through the use of materials low in fat and muscle tissue and the addition of water to give the imitation product a consistence similar to that of genuine sausage.

All the products included in the comparison were produced and sold in the same localities and the prices quoted are those prevailing in the same market and at the same time. Three of the five samples of genuine sausage were collected from establishments also preparing imitation products included in the comparison. All the samples were typical of the product represented. The comparison shows clearly, therefore, that the manufacture of imitation product is not so much a means of supplying consumers with a wholesome and nourishing meat food product at a low price as a means of selling water and flour at the price of meat.

ROBERT H. KERR.

SEED Import Control Law Strengthened Red clover is the most important soil builder throughout the humid regions of the United States outside the Cotton Belt, and alfalfa, long important in the drier areas, both with and without irrigation, is now successfully grown in every State. The United States does not, on the average, produce enough seed of either of these basic crops to meet the seeding requirements and substantial importations of seed from surplus-producing countries are necessary. It is obviously important to safeguard the quality of these imports.

Table 22 shows the imports of seed of red clover and alfalfa by years and countries from which exported to the United States.

TABLE 22.—*Alfalfa and red clover seed permitted entry into the United States under the seed importation act by fiscal years and by countries exporting*

[Reported by the seed-testing laboratory, Bureau of Plant Industry]

[In thousands—000 omitted]

Country exporting	1919	1920	1921	1922	1923	1924	1925	1926
	Alfalfa							
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Argentina		2,439	386	6,555	7,752	7,133	1,038	222
Canada	34	11	2	45	4	961	1,690	4,219
Chile		27		223				
England	55	1,140	18	36	[1] 574	21		
France	143	1,547	279	33		2,906	886	
Germany		59		71	117	217	50	
Italy	386	9,152	229			113	499	
Latvia								107
Siberia	[1] 153	[1] 3,570						
South Africa		165		274		1,328	509	
Turkey					[1] 174			
Uruguay					165			
Other countries		721	29	22	1	139	[2] 111	1
	Red clover							
Argentina				17				
Canada	754	98	280	449	5	333	152	288
Chile			80	671	12	779	233	85
Czechoslovakia			132	374		265	45	
England	56	1,786	209		45	[3] 3,999	[4] 281	
France	84	9,253	15 225	2,948	170	17,610	4.933	18,890
Germany		195	44	2,852	84	126	433	390
Holland								11
Italy	154	7,809	222	2,054		999	151	33
Scotland							154	
South Africa	3							
Other countries		126	142	1,027	132	618	160	28

[1] Of Turkestan origin.
[2] From Hungary
[3] 585,000 pounds of this was of Chilean origin.
[4] All of Chilean origin except 22,000 pounds.

Until about 25 years ago the quality of imported seed of agricultural crops was given little consideration. Seed of yellow trefoil was frequently imported into the United States only to be used as an adulterant of red clover and alfalfa seed.

Through an arrangement with the United States Customs Service, samples of all imported lots of forage-plant seeds have for many years been furnished to the United States Department of Agriculture for examination for quality. When these examinations were begun many importations were found to be worthless for seeding purposes, as they were composed largely of screenings which did not find a ready market in Europe, although this material was imported into the United States to be sold to our farmers. The country which does not scrutinize its imports naturally gets the poorest the world has to offer in seeds, as in other commodities.

A series of purity and germination tests of alfalfa and red clover seed imported during 1906 showed many lots containing large proportions of weed seeds, the live seeds present being small and shriveled and some lots contained few or no live seeds. Public sentiment at that time was concerned mostly with adulteration and the presence of weed seeds, and relatively little attention was given to germination.

The seed importation act of August, 1912, was intended to prohibit the importation of adulterated forage-plant seeds as well as those containing large proportions of weed seeds. It prohibited the importation into the United States of the seeds named in the act when adulterated or when they contained more than 3 per cent of weed seeds, and seed of clover and alfalfa when it contained more than 90 seeds of dodder per pound. Dodder was particularly discriminated against, as it is a destructive parasite in both clover and alfalfa fields. The effect of this act was to keep out of the United States the weedy screenings of alfalfa and red clover which had previously been imported. It did not, however, prevent the importation of seed which was dead, when it was relatively free from weed seeds, nor the importation of orchard grass and other kinds of chaff containing little or no seed, although these commodities could only be used for purposes of adulterating farm seeds.

Proportion of Pure Seed Required

On August 11, 1916, the seed importation act was amended by requiring that each lot of bluegrass imported should contain at least 50 per cent of live pure bluegrass seed and that each lot of other kinds of seeds should contain at least 65 per cent of live pure seed of the kind imported. Although these requirements are low, there have been shipments of most of the kinds of forage-plant seeds subject to the act prohibited entry into the United States on account of low germination.

Imported forage-plant seeds that are not fit for seeding purposes, within the meaning of the act, can not now be brought into the United States and sold to our farmers.

In recent years, the question of adaptability of forage crops has been given increasing attention. Comparative tests carried on in many States and extending over a period of years shows that the expected crop is largely dependent on the region of production of the seed. The most extensive work along this line has been carried on with red clover and alfalfa. It has been shown that red clover seed from Italy is strikingly unadapted to general use in the United States, as is alfalfa from Turkestan and South Africa. The belief in the superiority of domestic seed and the wide difference in adaptability of imported seed from various sources of production has so influenced the seed market that domestic seed often has a market value one and one-half times that of imported seed. This has resulted in much imported seed of red clover and alfalfa being sold to farmers as domestic seed and at the price of domestic seed. The situation was most unsatisfactory, both from the standpoint of the farmer and the honest seed merchant. The only way in which it could be effectively remedied seemed to be to provide a method by which the ultimate consumer, the farmer who sows the seed, would always have certain definite information as to its origin, which information would be carried by the seed itself.

Seed Must Be Colored

With a view to making information of this kind available, the seed importation act was again amended April 26, 1926, providing that all seed of alfalfa and red clover be colored at the time it comes

into the country. Ten per cent of all the seed from those regions which the Secretary of Agriculture has found to produce seed unadapted to general agricultural use in the United States, as well as seed of unknown origin, will be colored red. One per cent of seed from Canada will be colored violet, and 1 per cent of seed from other regions will be colored green.

This coloring will be done with alcohol-soluble stains, and if in any case there is doubt as to whether the seed has been stained, the fact can easily be determined by putting a tablespoonful of the seed in half a glass of wood alcohol or denatured alcohol and stirring it. The alcohol will show the characteristic color if the seed was imported.

This coloring provision with respect to imported alfalfa and red clover seed will automatically provide without expense a nationwide field test as to the crop-producing value of imported and domestic grown seed.

All but five States within recent years have passed laws regulating the sale of agricultural seeds within those States. A State can not control the movement of agricultural seeds into the State, so without reference to State laws and in the absence of Federal legislation it has been possible for a seed merchant in one State to ship into another State agricultural seeds which were prohibited sale in the State into which they were shipped. In order to supplement State laws with respect to interstate shipments of agricultural seeds, the seed importation act, as amended April 26, 1926, makes any seeds which are wilfully misbranded and shipped in interstate commerce subject to seizure and confiscation.

Farmer Has More Protection

The Federal seed act, the title under which the seed importation act, as amended, is now known, gives the American farmer a greater measure of protection with respect to imported forage-plant seeds than he is given with respect to the same seeds of domestic production.

All seeds subject to the act meet the following requirements before they are permitted entry into the United States:

1. Contain not to exceed 5 per cent of adulterants.
2. Contain not to exceed 3 per cent of seeds of weeds.
3. Contain not to exceed 90 seeds per pound of dodder in the case of clover and alfalfa.
4. Contain not less than 65 per cent of live seed of the kind. In the case of bluegrass 50 per cent.
5. Seed of alfalfa and red clover will be colored to indicate origin, as follows:

(*a*) Seed declared by the Secretary of Agriculture to be unadapted to general use in the United States and seed of unknown origin will be colored 10 per cent red.

(*b*) Seed from Canada 1 per cent violet.

(*c*) Seed from all other sources 1 per cent green.

6. Seed shipped from one State to another will be subject to seizure and confiscation if wilfully misbranded.

In short, all imported seed subject to the Federal seed act will be fit to sow. The colored seed in alfalfa and red clover will indicate

its origin. State laws regulating the sale of agricultural seeds will be supplemented by preventing wilfully misbranded seeds from being shipped from one State to another.

EDGAR BROWN.

SEED Improvement Associations in United States Seed improvement has been one of the most important aids in recent years in obtaining larger yields and more economic production. Getting good seed into general use in any community has depended largely on four main things: (1) Development in the State of new varieties of crops, or the improvement of old varieties already in use, (2) determination in what section of the State these varieties are best adapted, (3) development of adequate seed supplies of such varieties locally within the

FIG. 199.—Field inspection of potatoes at blooming stage for mixture of varieties

community, the county, or the State, and (4) a well-organized means for the distribution of improved seed supplies, so that many farmers can readily obtain the improved seed.

The developing of new varieties or improvement of old varieties is mainly done by the State experiment stations cooperating with the United States Department of Agriculture. The Federal and State experiment stations work with the cooperative extension service in studying and determining the localities to which the new and improved varieties are suited. Developing supplies of seed of these varieties adequate to meet the demand of farmers wanting such seed can not be handled by the experiment stations, since their work is restricted to investigation. This has led in a number of States to the development of a State seed-improvement association composed of active farmers cooperating with the extension service. The distribution of seed, it has been found, is best carried on by the State or seed-improvement association, although their main purpose is to standardize production rather than to serve as marketing agencies.

The business transactions of the association are carried on by the officials of the association, dealing direct with the organized seed trade, farmers' cooperative organizations, or individuals wishing to obtain improved seed.

The organization of State seed or crop-improvement associations has been the outstanding development in the program for getting improved seed used in new communities. The associations owe their existence very largely to the activity of extension workers working with their respective State experiment stations on a crop-improvement program. Such associations have been developed and are in operation in 34 States. Through cooperation with such associations it is possible for the extension service to take the improved seed that

FIG. 200.—Field inspection of corn for off-type plants

has been developed in a limited quantity by the experiment station, have it grown under careful supervision, kept free from varietal mixtures, noxious weeds, and injurious diseases, and save the largest possible quantity of this seed for distribution to the farmers in various communties of the State.

Standardization of Varieties

In a number of States the crop-improvement program is based largely on the standardization of the best varieties of grain grown in the State. Such standardization has been found practical only when the State seed or crop-improvement association has cooperated closely with the extension service and the experiment station. For example, Oregon reports as high as 90 per cent of the entire wheat acreage in some of its eastern counties is seeded to one variety. In Maine, where seed-improvement work in growing potatoes was started in 1922 by the experiment station and the extension service, 65 per cent of the total acreage of potatoes in the State is now reported seeded to improved varieties.

Through the development in recent years of seed-improvement work, farmers have been able to put to much wider practical use the results of the work carried on by the experiment stations in developing and improving crop varieties. The State experiment stations can not enter the commercial field. Neither do their funds and limited facilities permit of developing more than a limited supply of seed of any one crop. Through the cooperation of the extension service and the State seed-improvement associations this deficiency is being supplied and adequate supplies of good seed have been provided in several thousand communities where a farmer, if he desires, can now obtain pure seed of approved varieties at a reasonable price.

O. S. Fisher.

SEED Records Win Support of Seedsmen In the days of kerosene lamps and of planting potatoes by the light of the moon, seeds were sold like salt and coal. Nature produced the seeds, so why try to change them. That apparently was the theory on which early seed dealers worked. So long as the seeds were plump and of good color, no further questions were asked. Time, however, has wrought changes, slowly at first but rapidly in comparatively recent years. The "appearance" stage was followed by the "purity and germination" stage and finally by the "origin" stage. To-day, of course, the finished product embodies the best things in these stages and they are rapidly being amalgamated in such a way that seeds are coming more and more to be sold on an intrinsic-value basis.

Farmer Now Has Truer Yardstick

Seed laws, tests conducted by State colleges and experiment stations and the United States Department of Agriculture, and higher prices for seed, land, and labor have paved the way largely for this metamorphosis. The farmer has kept his eyes and ears open and is demanding better and better seed. He now has a truer yardstick with which to measure the real value of seed.

The progressive seedsman has not stood idly by, but has changed his business to meet changing conditions. To be in a position to supply information quickly and accurately regarding origin, he has found it necessary to keep more and better records. Of course there are other reasons for keeping records but perhaps nothing in recent years has contributed more to impressing upon seedsmen the importance of stock records than has the agitation regarding origin.

Lots Are Bulked Together

The modern seedsman bulks 2 to 25 or more lots together, usually before recleaning, because he finds it advantageous to do so. Upwards of 5,000 country lots of seed may be received by the larger seedsmen in a season. It would be impracticable to sell these lots separately for a number of reasons. Most of these seedsmen, however, can tell from their bulking, milling, or dump records which lots were used in making up a given bulk lot.

With the finding that origin of growth of certain kinds of seed is of great importance has arisen the problem of verifying origin.

Although the presence of certain weed or other seeds, or of inert matter characteristic of the region in which a given kind of agricultural seed has been produced, frequently furnishes a clue to the source or origin of this seed, such examination is futile in too many cases.

The Bureau of Agricultural Economics has given considerable study to this problem during the past year. About 60 seedsmen have been visited and approximately 250 record forms have been obtained from them. These forms have been studied and some of the best features have been incorporated in tentative forms, such as receiving, milling, stock, and invoice records. This bureau has reached the conclusion that a system of records which preserved the identity of seed from the time it entered the seedsman's warehouse, together with outside—preferably voluntary—supervision, would go a long way toward insuring that the correct information as to origin would be passed on to the buyer.

Verification System Practicable

That a system of verification of origin based on stock records is practicable, is evidenced by the fact that fully 90 per cent of the progressive seedsmen are now keeping complete stock records. The second seed marketing conference held November 30, 1926, in Chicago, the International Crop Improvement Association at its annual meeting the following day, and the Wholesale Grass Seed Dealers' Association at its midwinter meeting the following week indorsed the studies on seed-stock records that this bureau has made and recommended that they be continued, and that this bureau devise a complete system of inspection and verification of stock records of seed handlers wishing to sell "verified-origin" seed.

The big objective of this whole movement is to improve the marketing of certain kinds of seeds, principally alfalfa and red clover, the origin of which is of considerable importance. Staining, as provided for under the amendment to the seed importation act, protects the alert buyer against the substitution or misrepresentation of foreign red clover or alfalfa for domestic seed. It is just as important, if not more important, that he be protected effectively against misrepresentation of domestic seed. The buyer is entitled to know where the seed which he is buying, whether it be imported or domestic, was produced.

The Bureau of Agricultural Economics will issue in the near future revised forms for receiving, bulking, and shipping records, which, together with the sample of seed and the lot number on the tag, would provide a chain of evidence that would afford an effective check on statements of origin. These forms would tend to stimulate interest in the keeping of better records and to bring about greater uniformity in those being used by many seedsmen. Seed bearing a "verified-origin" tag doubtless would command a premium sufficient to cover possible additional expenses in the keeping of records and costs of inspection or supervision. This would tend to facilitate the distribution of seeds adaptable for the various States to the betterment of the agriculture of the country.

G. C. Edler.

SHEEP Acres Test Pastures at Beltsville Sheep Acres is the name used to designate a portion of the animal husbandry experiment farm at Beltsville, Md., which has been set aside for the study of sheep production under intensive conditions typical of the South Atlantic region of the United States. This tract, consisting of approximately 100 acres of tillable land, has been improved with a well-planned system of pasture rotation and modern sheep equipment. (Fig. 201.)

Although there had been some sheep at the Beltsville farm since 1911, the work as now outlined was begun in the fall of 1915, when 53 purebred Southdown ewe lambs, bred at the United States Morgan Horse Farm, Middlebury, Vt., were shipped to Beltsville.

Advantages of Forage-Crop Pastures

One of the main lines of work conducted at Sheep Acres is the development of a practical system of forage-crop pastures whereby sheep can be pastured longer and moved from field to field more often than when kept by the usual permanent-pasture method. This makes it possible to keep the farm flock on less cured feed, which is rather

FIG. 201.—General view of Sheep Acres, a 100-acre tract devoted to sheep experiments at the animal-husbandry experiment farm, Beltsville, Md.

expensive in this region. In addition, sheep can be kept in larger numbers on a given area, because the danger of serious infestation and loss from internal parasites—one of the principal drawbacks to the sheep industry along the eastern seaboard—is greatly reduced. The results of this work are discussed in Farmers' Bulletin 1181, "Raising Sheep on Temporary Pastures."

Another problem of general interest which is being studied at the farm is the effect of different degrees of nourishment of the ewes at breeding time on the percentage of twins in the lamb crop. Results covering 10 years' work show an advantage of 16 lambs per 100 ewes in favor of the highly nourished ewes compared with those kept on short feed during breeding season. Work on this experiment is reported in Department Bulletin 996, "Flushing and Other Means of Increasing Lamb Yields."

Growth of Lambs Studied

The study of various phases of growth in lambs is another problem being investigated at Sheep Acres. Weekly weighings are made on all lambs until 1 year of age and all mature stock is weighed at intervals of two weeks. Studies are made on the growth of lambs

as related to birth weight, gain of dam during gestation, weight and age of dam, and size of sire. Further data are also obtained from periodical measurements on representative lambs of each of the breeds. These data consist in measurements of width and depth of chest, length from shoulder to hip, circumference of the middle of the body, and length from nose to the end of the tail dock.

FIG. 202.—Hampshire stud ram used at Sheep Acres

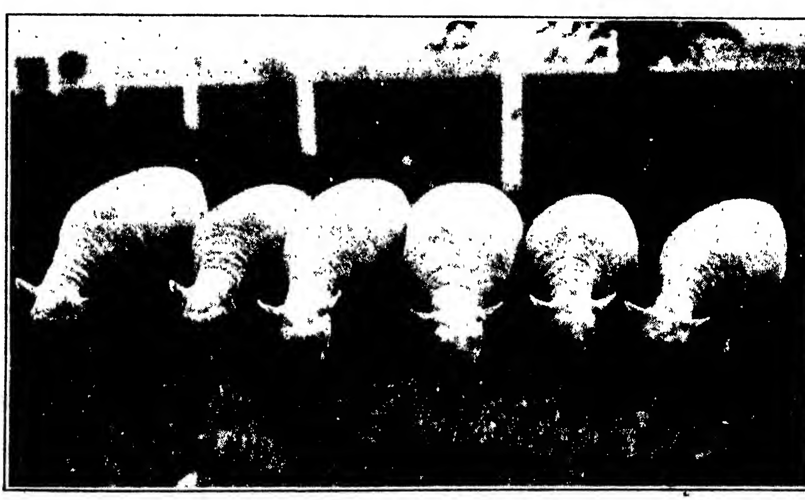

FIG. 203.—Yearling ewes of the Southdown breed, raised at Sheep Acres

Type fixing in purebred sheep is carried on at this station by selective breeding. The matings are made as a result of information obtained from the bureau's scoring system, which consists of five numerical scores on the mutton conformation and five scores on the wool of each individual sheep. Corrections are attempted in the matings by use of rams which show by their offspring that

they are especially excellent in their ability to transmit characteristics in which a ewe shows, by her offspring, that she is lacking. Controlled breeding is practiced and by using a rather large number of tested sires much has been accomplished in the elimination of undesirable characteristics in the progeny.

How the Flocks Are Improved

The flocks at Beltsville, December 1, 1926, consisted of 48 Southdown, 30 Shropshire, 27 Hampshire, and 30 Corriedale ewes of breeding age, 12 stud rams, 30 ram lambs, and 40 ewe lambs of the various breeds. These flocks are maintained on a basis of one-quarter replacement each year by the addition of ewe lambs produced at the farm.

Room is made for the ewe lambs by the selection of ewes of various ages for disposal each year. None of the best ewe lambs are ever sold. By this process it has been possible to set the type and fix the characteristics of each of these flocks far beyond what the average sheep breeder can do if he depends on apparent individual excellence of the breeding stock rather than on a careful study of the strong points and weaknesses in breeding ability of individual sheep as shown by their offspring.

C. G. POTTS.

SHEEP Experiment Station at Dubois, Idaho, is Unique In 1915 President Wilson signed an Executive order creating a reservation of 28,160 acres of sheep-grazing land near Dubois, Idaho. This land was an undeveloped sagebrush range typical of vast areas of the intermountain regions of the West, where about half of America's sheep are produced. Congress then appropriated funds for the establishment of the United States Sheep Experiment Station on this tract. (Fig. 204.) In 1917 a band of about 1,000 Government-owned sheep began grazing there, and the construction of the necessary equipment was begun.

Most of this reservation lies far from running streams or any other natural body of water, so that the first important step in the development work was the digging of a well. The elevation at headquarters, where the well had to be dug, is more than a mile and the soil is of lava-rock formation. In order to insure an abundant supply of good water the well was dug through rock to the depth of 750 feet.

After the construction of necessary barns, silos, houses, and water reservoirs and the building of 40 miles of fencing a definite program of experiments in the problems of range-sheep men was promptly put into operation.

It was found necessary to have an area for summer grazing definitely assigned to the station. For this purpose President Harding, in 1922, signed an Executive order setting aside 16,650 acres near the Continental Divide, about 40 miles northeast of Dubois, for use in summer grazing experiments with sheep, making a total of 44,810 acres for range-sheep experiments, all within 60 miles of Yellowstone National Park.

Results Apply to Practical Range Problems

All operations at this station are kept in line with good range practice, and the results of the experiments apply directly to the practical problems of sheep producers, especially of the intermountain ranges. Approximately 16,000 acres were fenced in the fall of 1920, thereby excluding all roaming livestock from that area. During the next five years an average of 3,100 sheep were grazed on the area each spring and fall for a combined season of 120 days. During this five-year period grazing was not started quite so early in the spring as formerly, and the camps and temporary watering places were moved frequently to avoid overgrazing local areas. In June, 1925, a careful survey was made of the vegetation and its grazing value

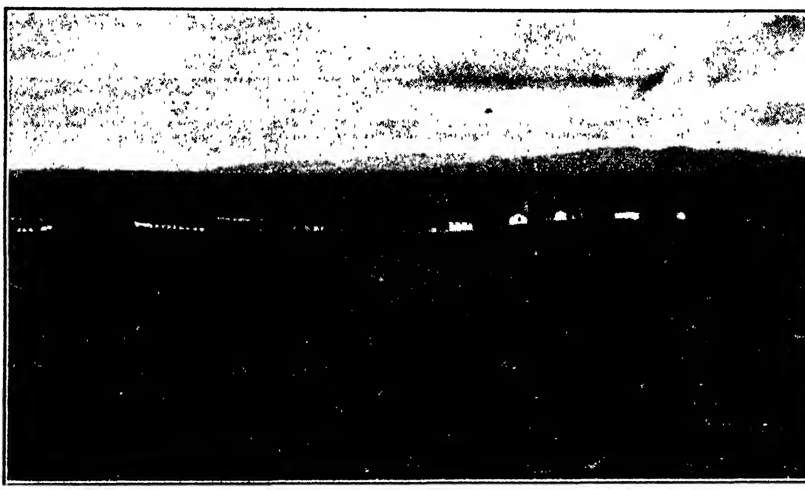

FIG. 204.—Headquarters of the United States Sheep Experiment Station at Dubois, Idaho. The foreground shows the sagebrush type of range where the sheep graze during the spring and fall. In winter they are trailed 40 miles to the deep, protected canyons of the mountain ranges in the background

on this protected area and on similar but unprotected grazing lands just outside the fenced area. It was found that the protected area had a carrying capacity of 160 sheep per square mile for a 120-day period and the unprotected range a capacity of only 135 sheep per square mile for the same period. Thus the protected range was 18.5 per cent better than the unprotected range as a result of controlling the number of sheep and the use of the range during a more appropriate grazing season.

Columbia Breed of Sheep Developed

The development of the Columbia breed of sheep is another result of the station's work. The foundation of this breed is the Lincoln-Rambouillet crossbred. The crossbred ewes have been mated continuously with crossbred rams, until now the type is fairly well established. The Columbia sheep yield heavier fleeces and heavier lambs than any other breeds tested under similar conditions by the department. Other experiments show that Rambouillets yield good feeder

lambs and excellent, fine wool, and that Corriedales produce splendid quality in both lambs and wool.

One outstanding discovery in the station's wool experiments is the fact that length of staple in Rambouillet fleeces has a very important influence on the total weight of clean wool. Recent results show that on a normal market each addition of 1 inch in the length of staple results in an increase of from $1.25 to $1.50 per fleece. Western woolgrowers who keep sheep by the thousands are finding such information of great practical benefit.

Lamb-production experiments show that the use of Hampshire rams with Rambouillet or Corriedale ewes under conditions of the intermountain range results in lambs of greater weight than purebred Rambouillet or Corriedale lambs at market age. However, Corriedale lambs have averaged the higher in quality of meat produced. A band of 1,200 ewes is used in this experiment.

FIG. 205.—A band of Corriedale and Columbia ewes on spring range just before "bedding down" at sundown. The camp wagon is the herder's home

Annual Field Day Held

Each spring a field-day meeting is held at the station and is well attended by stockmen and workers of the surrounding States. Shearing is then in progress and the results of the various experimental projects are demonstrated. The visitors go out over the range and see at first-hand how the grazing value of range vegetation can be improved and how the usefulness of dry ranges may be extended by methods of supplying stock water. Displays of mounted plants tell important stories about the forage resources of the ranges. Graphic charts and tabulations on exhibit at the sheep pens tell facts of practical application illustrated by the sheep themselves. State and Federal investigators also discuss at this meeting the technical phases of the work and exchange views on plans for future work.

So far as department workers are able to learn, the United States sheep experiment station is the only experiment station in the world that is devoted entirely to the solution of sheep problems under practical range conditions. It is dedicated to a study of the efficient use of intermountain ranges which are adapted only to grazing purposes—a conservation measure of national importance.

D. A. SPENCER.

SHOE Soles From "Bend" of Hides Most Durable Our bill of about $1,500,000,000 for over 300,000,000 pairs of boots and shoes each year makes the quality and wear of shoe soles a matter of real economic importance, both individually and collectively. Most of our shoe soles are made of leather. As the result of various factors, however, leather soles are not all alike in either composition or wear.

Thickness

Quite naturally the wear of a pair of soles depends largely upon their thickness. In general, thick soles are made from the best heavy steer hides, as distinct from the lighter-weight cowhides, from which many thin soles are obtained. Thick soles contain more leather substance, generally of a better fiber, and not only last longer but afford more protection to the feet against the weather and against injury from pebbles and rough surfaces.

In the leather trade the thickness of soles is measured by a unit known as the "iron," which is one-forty-eighth of an inch. Consequently one-quarter of an inch is 12 irons. The United States Army specifies outsole leather of part of hide used at least 9 irons for soldiers' shoes.

Another important factor in the wear of soles is the part of the hide from which the leather is cut. Experimental work done in the Bureau of Chemistry indicates that this is more vital than the kind of leather, so far as the present-day tannages, such as oak, union, or hemlock, are concerned. An animal's hide varies widely in texture and fiber. Consequently some sections of it make much better leather than others. The sections into which sole-leather hides and "sides" are divided are the head, shoulder, bend, and belly, as shown in Figure 207, which is an outline of a side, or one-half of a hide, obtained by splitting the hide down the backbone line. Hides are usually split this way before tanning. The bend is about 48 per cent, or very nearly one-half, of the side; the belly is about one-fourth; and the shoulder is about one-fifth.

Soles That Give Greatest Wear

The best-wearing soles are cut from the bend, approximately a rectangle of leather extending 50 to 55 inches from the root of the animal's tail toward the head and about 25 inches from the backbone line toward the belly. The exact size of a bend is determined by the "breaks," or soft spots, at the fore and hind flanks. The cut that separates the bend from the belly is nearly parallel with the backbone

edge and passes through the top of the two "breaks." The cut that divides the bend from the shoulder meets the belly cut at the "break" at the fore flank.

Bends of sole leather can often be seen in shoe repair shops. The leather in the bend is dense, firm, and thick fibered; that in the belly is flabby and more open fibered. Wear tests conducted by the Bureau of Chemistry have shown that soles from the bend wear about twice

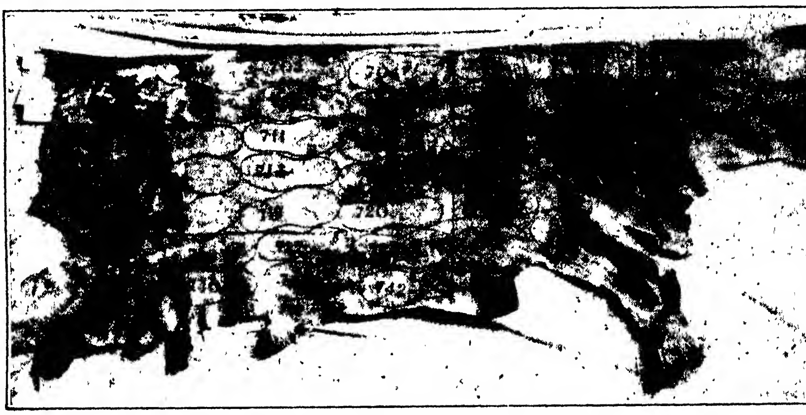

FIG. 206.—Sections of a side of sole leather

as long as soles from the belly and nearly one and one-half times as long as those from the shoulder. Often when one sole of a pair of shoes wears out very much faster than the other it is because the poorer sole was cut from a poorer section of the hide.

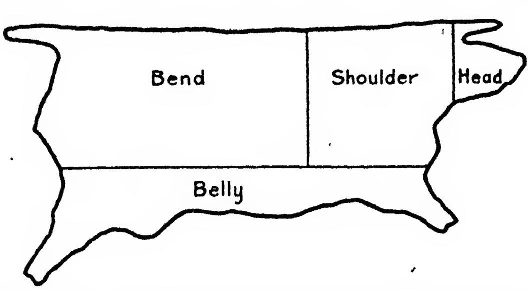

FIG. 207.—Layout of test soles for determining the wear of different parts of the hide

Tannage Used

A third important factor in the wear of soles is the kind of leather. The sole leather that the public knows best is vegetable tanned. It is made by treating hides with infusions and extracts of barks, woods, nuts, and leaves, all products of the vegetable kingdom, which is responsible for the name, "vegetable-tanned leather." Its natural color is tan, varying in shades from fawn to reddish brown, depending upon the materials used and the treatment.

Among other tanning processes is one known as mineral tannage, in which products of mineral origin are used. The most important and most widely used mineral-tanned leather is called "chrome leather," which is tanned with chromium chemicals. Although chrome leather has been made for 20 years or more, it is extremely modern as compared with vegetable-tanned leather.

Most shoe upper leather of to-day is chrome tanned. Practically all such leather is dyed, but often the natural and very characteristic

pale blue to green color of chrome leather can be seen by closely examining an exposed edge.

At present the quantity of chrome sole leather made is relatively small. Natural or unwaxed chrome sole leather is used to some extent on gymnasium and other athletic shoes for indoor wear. Unwaxed chrome soles are very porous and readily absorb moisture, which makes them unsuitable for outdoor use except in dry regions. To increase its water resistance and thus make it more suitable for general wear, unwaxed chrome sole leather is filled with waxes and oils, producing what is known as "waxed" chrome, which is generally dark green or nearly black. Such leather is used to some extent in men's and boys' shoes and in work shoes.

Soles That Wear Longest

Recent wear experiments conducted by the Bureau of Chemistry with soldiers and civilians show that unwaxed chrome sole leather is the longest wearing sole leather made. Waxing to impart water resistance sacrifices some of the wear, but even then the resulting product wears longer than vegetable-tanned sole leather.

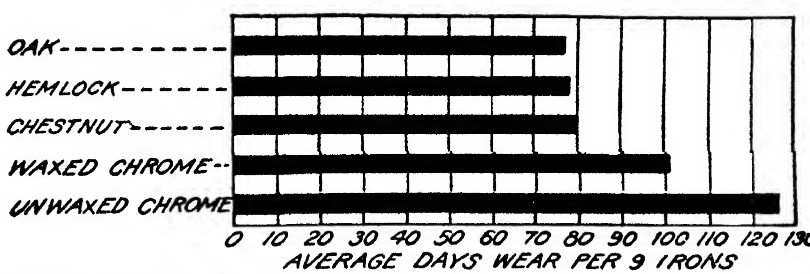

FIG. 208.—Summary of wear tests on Army shoes soled with different kinds of leather

Figure 208 graphically summarizes the results from a set of experiments conducted with soldiers. The days' wear for a standard thickness of 9 irons is directly proportional to the length of the heavy black line. For these experiments all soles were cut from bends. Unwaxed chrome soles showed an average wear of 126 days and waxed chrome soles one of 102 days. Vegetable-tanned sole leathers, of oak bark, hemlock bark, and chestnut wood tannages, showed from 78 to 80 days' wear. These experiments showed also that loading such leathers with glucose and epsom salts adds nothing to their wearing quality.

Chrome sole leather presents some difficulty to the shoe manufacturer, often requiring special handling through certain factory operations. It is sometimes slippery and has a tendency to spread, producing an uneven and slightly frayed edge. Although at first it is rather stiff, especially if heavily waxed, the stiffness usually disappears after a little wear. Chiefly for such reasons chrome sole leather has not been more generally adopted by the trade. Chrome soles are particularly serviceable when wear and not extreme refinement in appearance is the first consideration, as, for example, in men's outing and work shoes and in boys' shoes.

Recently efforts have been made to combine the desirable properties of vegetable-tanned leather and of chrome-tanned sole leather in a product known as chrome retan leather. In this process the hides are first tanned with chromium and then retanned with vegetable materials. Experiments are now under way to determine the relative merits of such a leather for shoe soles.

F. P. VEITCH.
R. W. FREY.

SIRUP "Sugaring" Preventable by Use of Invertase Cane sirup and sorgo sirup often "sugar," or crystallize, and sometimes maple sirup does. The principal sugar of these three sirups, and the one which separates during crystallization, is cane sugar, the chemical name for which is sucrose. Crystallization occurs when the quantity of this sugar in the sirup is too great to dissolve in the water present at the prevailing temperature. Sucrose is less soluble in cold than in warm weather. The presence of crystals of sugar gives sirup an unsightly appearance, which often detracts from its market value. Unfortunately, the thicker sirups preferred by many people have a greater tendency to undergo crystallization than those of more common density. The crystallization of sugar also increases with the ratio of sugar to the total solid material in solution in the sirup. This ratio increases with the degree of maturity of the sorgo and sugar canes and is generally higher in first-run maple sap than in last-run sap.

If a portion of the cane sugar (sucrose) is transformed into invert sugar the tendency to crystallize is greatly reduced. Advantage may be taken of this fact to prevent crystallization, even in very thick sirups. "Invert sugar," a mixture of the two sugars dextrose and levulose in equal parts, has about the same degree of sweetness as sucrose. The transformation of sucrose into invert sugar is called "inversion" and has practically no effect on the sweetness of sirup.

Some invert sugar is normally present in cane and sorgo juices and in maple sap. Sorgo juice contains more invert sugar than cane juice, which, in turn, contains more than maple sap. The standards of the Federal Government and of most States require that not more than 30 per cent of water be present in cane and sorgo sirups and not more than 35 per cent in maple sirup. If sirups contain no more than these specified amounts of water, crystallization of sugar does not often occur. If the sirups are evaporated to lower contents of water, however, sugar usually separates on standing, the crystallization increasing as the water content decreases. Under such conditions there is usually not enough invert sugar present to prevent crystallization and separation of sugar.

Cane and sorgo juices and maple sap contain acids which cause some inversion during evaporation. The amount of cane sugar inverted increases with the time required for evaporation, but it is not advisable to prolong evaporation for this purpose because of its harmful effect on the color and flavor of the sirup. Evaporation should be conducted just as rapidly as possible. Inversion of cane sugar can be increased by adding acid to the juice or sap, thereby

preventing crystallization. This is not advisable, however, because of the effect of the acid on the flavor. Fortunately there is another method by which enough cane sugar can be inverted to prevent crystallization without affecting the flavor. This is by the use of invertase, a substance belonging to the type of substances called enzymes that are widely distributed in nature in both plants and animals. For instance, the sugar of the nectar of flowers consists largely of cane sugar which is transformed by bees, by means of the enzyme invertase, into invert sugar, the sugar of honey.

The Use of Invertase

The Bureau of Chemistry has developed a method whereby the sugaring of cane, sorgo, and maple sirups may be prevented by the use of invertase. Briefly, this method is as follows: In making cane and sorgo sirups it is best to add the invertase at an intermediate stage of the evaporation, say at a density corresponding to about 20° Baumé (when the sirup is about two-thirds evaporated). Invertase is destroyed at fairly high temperatures and should not be added directly to the boiling sirup. The partially finished sirup is allowed to cool to about 150° F., the invertase is added, and the sirup is allowed to stand over night. It is then evaporated the next day to final density. Two evaporators can be used conveniently in the process. This also increases the total daily output and justifies the expense of the second evaporator. One evaporator is used for bringing the partially finished sirup, treated with invertase, to final density while the other evaporator is concentrating fresh juice to partially finished sirup. If the second evaporator does not seem desirable, a single evaporator can be used by discontinuing grinding while the partially finished sirup treated with invertase is being evaporated to final density. A tank is provided for holding the partially finished sirup during the overnight treatment with invertase.

In making maple sirup all that is necessary is the addition of the invertase to the finished sirup as soon as it is cool and at the end of a certain period, depending upon the amount of the invertase added, heating the sirup to about 185° F., so as to destroy the invertase and prevent any further action. If the maple sirup is to be held in bulk before canning, it may receive the invertase treatment during the storage period. The heating required to destroy the invertase may be done at the time the sirup is canned.

Under certain conditions invertase can be added to finished cane and sorgo sirups instead of during evaporation. This is conveniently done in connection with the operation of a canning plant, the sirup being warmed to 150° F., invertase added, and the sirup allowed to stand for about 36 hours, after which it is heated to the required temperature for canning.

The cost of invertase is about one-half cent per gallon of cane and maple sirups and about one-fourth cent per gallon of sorgo sirup. Full directions for using invertase, including names and addresses of manufacturers, may be obtained from the Bureau of Chemistry, United States Department of Agriculture.

H. S. PAINE.

SIZE of Farms Important on Irrigated Land Size of farm materially influences the effectiveness with which capital and labor can be used in the organization and operation of irrigated farms. Considerable light was thrown on this subject by a four-year study of irrigated farming in southern Idaho, which makes it possible to compare groups of 40-acre and 80-acre farms.

The two groups were classified as "general cash crop farms," very little of the income being derived from the sale of livestock and livestock products. The proportional part of the total farm land of the two size-groups that was tillable or was in crops differed very little. There was some variation in the percentage of the crop area that was devoted to the respective crops during the four years of the study, 1919 to 1922. This, however, is not sufficient to account for the difference in the crop acres handled per horse and per month of man labor used by the two groups.

The following are some of the outstanding points of interest brought out in comparing the results obtained on the 40-acre and 80-acre farms during the four years of the study:

The 40-acre farms had, in round figures, an average of 5 per cent more of the total capital tied up in buildings and equipment than had the 80-acre farms. In other words, a greater percentage of the capital of the 80-acre farm was in land that could be used for producing crops.

The average yield of all crops for the four-year period for the two groups of farms differed but little, the 40-acre farms ranking a trifle the highest. The yields of alfalfa hay, sugar beets, dry field beans, and alsike-clover seed averaged highest on the 40-acre farms, while the yields of wheat, potatoes, and red-clover seed were highest on the 80-acre farms.

Net Return to Capital

The net return to capital for the four-year period averaged $453 for the 40-acre group and $1,341 for the 80-acre group. That is, the latter is 296 per cent of the former. The average net return to real estate for the period covered by the study was $6.50 per acre greater for the 80-acre farms than for the 40-acre group.

The 40-acre farms kept an average of 3.5 horses per farm, whereas the 80-acre farms kept 4.6. A work horse handled one-half more crop acres on the 80-acre farms than on the 40-acre farms. For each month of man labor used, 2.8 acres of crops were taken care of on the 40-acre farms as compared with 4.2 acres on the 80-acre farms.

Thus, it is evident, 80 acres is a more desirable size for this particular type of farming (general cash crops) in the area studied than is 40 acres. Other things being equal, the acreage devoted to each crop is about twice as large on an 80-acre farm as on one of 40 acres. For this reason practically all field operations can be performed more economically on the former than on the latter. A few illustrations should suffice to make this clear.

Much less time is consumed per crop acre in turning while performing the cultural and harvesting operations on 80-acre farms than on those of 40 acres. It requires about the same length of

time to repair the haymaking equipment and assemble a haymaking crew for 15 acres of alfalfa as for 30 acres. One man can irrigate about twice as many acres in a given time on an 80-acre farm as he can on one of 40 acres, because he has twice as large a volume or head of water with which to work. Thus, under general crop farming, the 80-acre farmer can use the various factors of production to better advantage than can the 40-acre farmer.

BYRON HUNTER.

SKIM Milk in Dry Form Has Various Uses Approximately 806,487,000 pounds of skim milk was used in 1925 in the manufacture of over 73,000,000 pounds of dry skim milk. This was approximately 2 per cent of the skim milk resulting from the manufacture of butter.

Although the quantity of milk used in the manufacture of dry skim milk represents but a small percentage of the total milk production, it should be remembered that the manufacture of dry skim milk is one of the more recent developments in the dairy industry. The relatively low production is partly due to a failure to realize the food value of skim-milk solids and the advantages this product possesses over fluid milk.

The conversion of surplus skim milk into the dry product, which can be shipped, stored, and handled with little danger of spoilage, makes dry skim milk valuable from the standpoint of convenience and a ready source of skim-milk supply in various industries wherein its use is advantageous. This is especially true for the nonmilk-producing areas of the country. It offers an opportunity for greater conservation of an excellent food supply for humans and animals and incidentally increases returns to the producer.

Food Value

An analysis of dried skim milk shows the constituents to be as follows: Proteins, 38 per cent; lactose, 50 per cent; salts, 8 per cent; fat, 1 per cent; and moisture, 3 per cent.

An analysis of average whole milk indicates that the ratio of protein to fat is approximately 1 to 1, while the ratio of sugar to fat is approximately 5 to 3.5. Assuming that each constituent is 100 per cent digestible and assimilable, the relative total caloric value of the constituents as foods would be as shown in Table 23:

TABLE 23.—*Relative total caloric value of food elements in milk*

Constituent	Parts per 100 parts of milk	Heat of combustion; calories per gram	Relative total caloric value	Approximate percentage of total
Fat	3.5	9.54	33.39	45
Protein	3.5	5.65	19.78	27
Sugar (lactose)	5.0	4.19	20.95	28
Salts (ash)	.7			

The figures in the table indicate that a considerable portion of the energy value of milk is contained in the skim milk and that dry skim milk is extremely valuable as a food. Energy values alone, however, do not indicate the value of the skim-milk solids as a food. Foods are needed not only because they furnish energy but also because they furnish material with which old tissues are repaired and new tissues are formed. The salts in milk are especially valuable foods in this respect though lacking in caloric value.

Foods differ in the ease with which they furnish these materials. The almost completely digestible and assimilable milk proteins and the readily metabolizable calcium and phosphorous compounds in dry skim milk make it especially valuable as a constituent of the diets of children, adults, and the feeds of growing animals.

The drying of skim milk does not seem to destroy the vitamins present.

It is difficult to state to what extent higher concentrations of lactose are utilized for energy requirements,[18] but it is known that they have a marked beneficial physiological effect in regulating the intestinal flora.

Uses in Bread

The need of increased nutritive values of human foods can be and is being met by increasing the various desired constituents through the addition of milk. When fresh milk is not available, butter and dry skim milk may be used.

The addition of dry skim milk to bread dough supplements the protein of flour with one of greater nutritive value. The readily assimilable salts of added dry skim milk furnish mineral constituents essential to proper development and growth. Added dry skim milk also improves the flavor and many of the physical characteristics. It has been found that the use of dry skim milk in bread-dough mixes to the extent of 4 per cent of the weight of the flour, produces a marked improvement in the size, weight, and texture of the loaves and adds greatly to the palatability of the product.

The different flours respond in varying degrees to the action of a dry milk. By using a good grade of flour the volume of the loaf is increased by approximately 10 per cent and the weight by approximately 4 per cent. It may be stated that cases wherein the volume increase is not marked, the weight of the loaf as well as other physical characteristics are enhanced. The extent to which the volume of loaf may be increased, depends largely upon the treatment of the milk prior to its manufacture into the dried form.

Results of investigations in the research laboratories of the Bureau of Dairy Industry show that dry milk from milk heated to 65° C. for varying lengths of time produced no increase of volume when used as an ingredient. Dry milk from skim milk heated to 95° C., when added to bread-dough mixes, produced loaf volume increases up to 10 per cent.

In general, it may be said that the added cost incurred by use of dry milk is balanced by the increase in yield per barrel of flour.

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[18] Approximately 90 per cent of the lactose of a diluted milk is utilized for energy requirements. G. Lusk. Science of Nutrition, 3d edition, p. 339. 1917.

Dry skim milk insures a source of clean skim-milk solids of uniform good quality which is economical in handling and storage and convenient in its uses. These advantages over fluid skim milk make it a valuable asset in the ice cream, the milk chocolate, and other industries wherein skim-milk solids are used. This is especially true in the areas of low milk production.

The many advantages of the product already recognized by industries are also being recognized by smaller units of trade. Its convenience and the ready availability of a skim-milk supply meet the fluctuating demands for fresh skim milk in hotels, clubs, and aboard ships.

There is also a need of increased nutritive value in the proper feeds of various animals. The use of dry skim milk as a supplement to other feeds for calves, pigs, and other animals insures them of a highly nutritive diet. The discovery that the incorporation of dry skim milk in the diets of growing chicks prevents coccidiosis has resulted in a marked increase in the use of this product in poultry feeds.

GEORGE E. HOLM.

SMUT Control by Disinfectants in Growing Favor The losses caused by cereal smuts amount to several millions of dollars annually in spite of the fact that seed treatments have been recommended for many years. Seed treatment has not been practiced as generally as the needs seem to demand, especially in case of certain of the cereal smuts which are easily controlled. This is due, to a certain extent, to the fact that seed injury often is caused by the generally recommended formaldehyde and copper-sulphate-lime treatments.

Factors That Influence Treatment

Several factors now are known to influence the effects of the treatment on the seed. Among the more important of these factors are the kind of seed, the variety treated, the conditions under which the seed is grown and subsequently handled, and the local soil and weather conditions existing where the treated seed is sown. In addition, variations may occur in the material, its preparation, and its application. The striking need for disinfectants which will control the smuts and at the same time cause no seed injury under these various conditions has led to intensive investigations during the past decade by scientific and commercial organizations. Out of these studies a few new materials of importance have become known. The more important of these are copper carbonate and some of the organic mercury compounds.

The dry copper-carbonate treatment was used successfully for the control of stinking smut of wheat in Australia in 1917. It was first used in the United States in 1920 by the United States Department of Agriculture and the California Agricultural Experiment Station. It was found to be much more satisfactory for the control of stinking smut of wheat than other treatments. Since that time copper carbonate has become the most popular treatment for the control of stinking smut in the United States.

Recently the Kansas Agricultural Experiment Station, cooperating with the Department of Agriculture, has found this treatment to be satisfactory for the control of covered-kernel smut of sorghum.

The copper-carbonate treatment consists in the thorough application of 2 to 2.5 ounces of copper carbonate, specially manufactured for seed-treating purposes, to each bushel of grain. To be effective, each kernel should be completely coated with the dust. Machines of the rotary type are best for mixing the dust with the seed. A simple type of homemade mixer is shown in Figure 209. A dust mask or wet handkerchief should be worn over the nose and mouth while the grain is being treated. Copper carbonate should not be mixed with grain by shoveling over on the floor. The dust gets into the air and causes irritation and nausea or even severe sickness if inhaled.

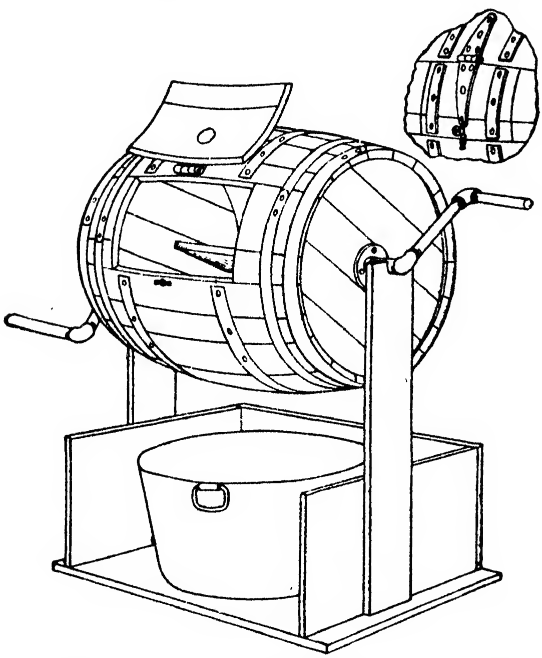

FIG. 209.—One type of homemade barrel mixer for applying copper carbonate to the seed. One or two boards 3 or 4 inches wide, the length of the barrel, should be nailed edgewise inside it to serve as agitators

Advantages of Copper Carbonate

Copper carbonate has many advantages over the old liquid treatments. (1) It does not injure germination (2) Seed can be treated whenever convenient and stored without injury. (3) Dusted seed can be sown at any time in dry or moist soil. (4) It requires little labor and expense to treat seed for large acreages. (5) Copper carbonate protects stored grain from attacks by weevils. Rats and mice will not eat treated grain unless forced to it by hunger.

The organic-mercury seed disinfectants were used in Germany as early as 1912. There has been a rather rapid development of these compounds in Europe and America since that time. During the past five years the Department of Agriculture has conducted experiments with these organic-mercury compounds and many related and unrelated materials. Both dusts and liquids were included in the materials tested. Many of these compounds have proved worthless, while others have shown considerable merit. Among the more promising of these are: Chlorphenol-mercury (including chlorophol, semesan, and uspulun), cresol-mercury (of which germisan is an outstanding representative), and ortho-nitro-phenol-mercury (including corona 620 and others).

These mercury compounds, applied either in dust or liquid form, control the stinking smut of wheat, but none of them has proved as satisfactory as copper carbonate. In limited experiments, the solutions have given promising results in the control of the smuts of oats. It is still doubtful if they will prove more satisfactory than formaldehyde for the control of oat smuts. In the control of barley smuts several of the organic mercury compounds, including chlorophol, corona No. 620, germisan, semesan, and uspulun, when used in solutions, have given excellent results. The seed is soaked for 1 hour in solutions containing 0.2 to 0.3 per cent of the compound.

Mercury Materials Effective

The results with these mercury materials have proved to be superior to those obtained with formaldehyde, from the standpoint of seed germination, smut control, and yields of plants from treated seed. Both the loose and covered smuts were controlled in the varieties of barley used in the experiments conducted by the department.

The mercury compounds are more expensive than formaldehyde. The additional expense may be more than compensated by the increased germination and yields. There is also a possibility of saving seed by sowing less of the treated seed. The mercury compounds are very poisonous and care should be used with treated seed to prevent poisoning of animals.

The trend of the investigations on seed disinfectants seems to be along promising lines. From the investigations now under way materials which are even more satisfactory may be obtained.

W. H. Tisdale.

SOIL Types and How They May Be Recognized

In view of the fact that modern agriculture has come to recognize that soil type is an important factor in determining crop adaptations and the needs of a soil, it is pertinent to ask: Do you know your soil types? To say that it is red clay, or "gray, pine-woods sandy land," or "gumbo," or "buckshot," or "loam" means little or nothing. Gumbo, for example, may be soil which ranges from the highly productive, limy, black clay found in the bottoms of such streams as the lower Missouri River to the unproductive gray, salty clay occurring in low positions in the Gulf coastal plain. The term "loam" is loosely applied to numerous soils having widely varying properties, cropping values, and cultural requirements.

These local names vary so much in meaning from one locality to another, and with the persons using them, that they can not be relied upon to convey correct ideas; and those who cling to them, failing to acquaint themselves with the important soil types of their localities, are at a distinct disadvantage, in that they are not in a position to understand the best use of the fertilizer, and the cultural and crop-variety tests carried on by the experiment stations of the country. Everyone knows that what one soil needs or what crops are best suited to it may not correspond in the least with the requirements

and adaptations of another type. One side of a field may need potash for cotton or corn, whereas the other side may need a phosphatic fertilizer only.

Throughout the country fertilizer and other tests are made more and more upon the important soil types, as established by State and Federal soil surveys. In order to apply the results of these tests with greater certainty of getting the most effective response, it is necessary to know that your soil is of the same general class or type as that upon which a particular experiment is conducted.

Value of Soil Surveys

This adjustment between soil types and agricultural methods is going to be brought more and more into the foreground of American agriculture, so that it is important that the up-to-date farmer familiarize himself with the prominent soil types of his locality.

FIG. 210.—The great land destroyer, erosion, at work

This can be done by studying the soil-survey reports and maps now being published by the United States Department of Agriculture.

Where reports are not available the State experiment stations frequently will be able to advise farmers as to the kinds of soils occurring in their respective localities.

Soil surveys usually are made of counties. In this work the entire acreage of the county is gone over, and the soils are classified according to standardized methods of identification. The different soils are given local names, the same name being applied to the same soil wherever it is found. The Orangeburg sandy loam, for example, was first mapped near the town of Orangeburg in Orangeburg County, S. C. Since its discovery it has been mapped in hundreds of counties of the Atlantic coastal plain, from North Carolina to the Brazos River in Texas. It is a brown sandy loam, from 8 to 12 inches deep, underlain by bright-red sandy clay of a friable nature. This

type of soil usually is in need of complete fertilizers which should be applied in moderate quantities. It is especially well adapted to peaches, pecans, and tobacco; and in addition, cotton, corn, peanuts, oats, velvet beans, and a number of other crops give good returns when properly treated.

This is the kind of information that is contained in soil-survey reports; and this is the kind of information that the leading farmers want. Of course, the exact needs of all soils can not be determined at once. Some States have already accumulated much information relating to the fertilizer needs of their important soil types. On the basis of such information soil-management recommendations are given to farmers, thus eliminating much guesswork. That this kind of definite soil knowledge is valuable to the farmer and to the State is shown by the remarkable agricultural advances made in those States which have advanced the farthest in this direction.

Different soils often interfere in the helpful interchange between farmers of methods and ideas, sometimes resulting in losses to one farmer because he, trying to follow the practices of another, did not know of unsuspected soil differences.

Surface Appraisal Inadequate

Many farmers know only the surface of their land. If the surface looks good, it is assumed that the soil is all right. Such appraisal is wrong probably as frequently as right. It is an assumption that does not regard the disadvantages of clay pans, hardpans and other impervious and impenetrable subsoils which not only seriously retard underdrainage and the upward movement of soil moisture, but which resist root penetration also. Soils having such subsoils become excessively dry when rain fails, and remain soggy for long periods when there is an abundance of rain. On them low yields result from late planting, too little or too much summer moisture, or from the imperfect development of plant roots.

The farmer often puzzles over his poor crops, when the real cause would be obvious if he better understood each of his soil types from top to bottom. He sometimes undertakes, usually without success, to correct with fertilizers or cultivation what might be accomplished by a better adjustment of crops and methods to his varying soils. Some types of soil, for example, frequently will grow redtop, but on which alfalfa, peaches, or apples can not be expected to give even ordinary returns, regardless of the intensity of fertilization or cultivation.

Tiling will not always correct the evils of poor drainage. Open ditches sometimes will prove beneficial on soils when tile may prove ineffective. This is true of those soil types which have subsoils consisting of dense, impervious clay which closes around the tile, sealing them as with paraffin or wax.

Shallow soils which are underlain by gravel, sand, or upturned beds of shale or other stratified rocks, usually are excessively droughty, and erode badly. On some slopes soils which have substrata consisting of loose materials are generally extremely susceptible to erosion, and as a rule should be used only for timber or grass. (Fig. 211.) Once a gully has cut down into the friable material, the land "melts" away almost like sugar. A soil which has a thin

surface layer over heavy, plastic clay, such as the shallow phases of the Susquehanna types, quickly loses its surface soil by rain wash, when brought under cultivation, and becomes fit only for the growing of trees. Soils of high susceptibility to washing should not be cultivated at all unless they are adequately terraced. Most of them could be more profitably used for grass or timber.

Soil Destruction by Erosion

It is estimated that 10,000,000 acres of land formerly cultivated already have been permanently destroyed in this country by erosion or made unfit for farm crops. In one county alone 50,000 acres, once largely cultivated, were found by actual survey to have been ruined by washing. This land could have been saved if the owners

FIG. 211.—Abandoned farmstead on an inferior soil on the Gulf coastal plain. This land was purchased by a hopeful farmer who was new to the locality. There was too much soggy land like that in the foreground, which would not grow even trees. Failure was foreordained by the unfavorable soil—it looked good, but was not

had understood its strong tendency to erode, and had protected the slopes with terraces, using the steeper ones for wood lots and pastures.

Those heavy clays and shallow soils over heavy clay, which are subject to severe erosion and are difficult to till, seldom can be farmed profitably. They should generally be recognized as timberlands and utilized in forestry. Here and there a farmer is eking out a living upon unfavorable ground, but he usually is forced to supplement his farm income by working elsewhere when he is not busy with his discouraging crops, or else he leads a precarious existence. By failing to understand the exceptional obstinacy of his ill-chosen soil, he often misinterprets the situation, wrongfully ascribing failure to mysterious causes or to his own inability to do things in just the right way. Thus feeling he has "lost the touch," he frequently moves to town or to some other locality to start over again.

In regions of low rainfall, where salts accumulate in certain heavy soils and in situations of imperfect drainage, disastrous mistakes are frequently made in attempts at farming. Sometimes a soil that looks good contains enough salt to prevent the successful growth of any crop. The writer recently saw land of this kind planted to grapefruit and cotton. The trees showed no indication of ever bearing, and the cotton would yield not more than 10 pounds of lint to the acre. For this land the owner, thinking it looked good, had paid $300 an acre. Actually it was not worth $5 an acre, because of its high alkali content and the extreme difficulty of improving it by drainage. In immediate contact with this worthless land was excellent soil, without alkali and without danger of ever being seriously affected by alkali. Had the purchaser consulted the soil-survey maps of the region, he would have been on his guard, and probably never have bought the land. His case is but one among thousands in which failure is foreordained by soil inferiority.

All the advantages that may be gained from getting better acquainted with your soil types can not be given here. The time has come when you should lay aside the old way of the indiscriminate use of all kinds of land for all kinds of crops, or applying the same methods in all fields regardless of the soil type. This is too much on the order of hit-or-miss farming. It will be better for you and the Nation if you will set about to get better acquainted with your soil types, so that you may cultivate those of better quality only, adapt your soils to the right crops, practice proper methods, and devote your inferior land to timber or grass.

H. H. Bennett.

SOY-Bean Output Increasing in United States

Although introduced as an unknown immigrant from the Orient many decades ago, not until recently has the soy bean won a recognized place in the cropping system of American farmers. The great interest shown in the soy bean and its products and the largely increased acreage and production during the last decade indicate that it is destined to become a crop of considerable economic importance in the United States.

In 1917 less than 500,000 acres were devoted to soy beans for all purposes. In 1924 there were 2,500,000 acres, of which about 1,000,000 acres were grown for hay, about 1,000,000 acres for pasture and silage, and more than 500,000 acres for seed production. About 2,283,000 bushels of seed were produced in 1917, while in 1924 nearly 10,000,000 bushels of seed and 1,360,000 tons of hay were produced. Although the increase in acreage has been general over the eastern half of the United States, the most marked increases have been in the Corn Belt States and in a few of the Southern States. In 1924 the five leading States for total acreage were Illinois, 747,000; Missouri, 400,000; North Carolina, 255,000; Indiana, 210,000; and Tennessee, 167,000; and for seed production North Carolina, 2,560,000 bushels; Illinois, 1,548,000 bushels; Missouri, 1,379,000 bushels; Ohio, 728,000 bushels; and Indiana, 650,000 bushels.

The soy bean can now be grown successfully in any climate suitable to corn or cotton. The Department of Agriculture during the past 10 years has developed, through introduction and by breeding

methods, varieties which have extended the range of profitable soy-bean culture far beyond what were at first considered its limits. The principal uses of the soy bean are hay, pasture, silage, grain, oil and oil meal, and human food. With such a wide range of uses the production of the soy bean is no longer localized and its increasing importance is assured.

Gaining Favor as Forage

As a forage crop alone, it is not likely that the soy bean will become a major field crop in the United States. However, even as a forage crop it has gained steadily in favor as indicated by the increased acreage from year to year. The forage is preserved either as hay or silage, or cut and fed green as soilage. It is also pastured extensively with sheep and hogs. Not infrequently, the soy bean is employed as a green manure or summer cover crop in orchards.

FIG. 212.—Best results in making soy-bean hay are obtained where the vines are piled in tall, narrow cocks

Unlike most other legumes the seed is rich in oil which makes the soy bean an important source of vegetable oil. Although the soy bean will no doubt continue to grow in importance as a forage crop, indications are that the future increase in soy bean acreage will be largely for the production of oil and oil meal. During the past few years, oil mills in the Corn Belt States and some of the Southern States have crushed fairly large quantities of domestic beans, and found ready markets for the oil and oil meal.

Soy-bean oil is used largely in the manufacture of soaps, paints, varnishes, linoleum, enamels, lubricating oils, printing ink, waterproof goods, salad oils, and substitutes for rubber, lard, and butter. The oil has now an important place in the world's trade and commercial utilization of vegetable oils. The cake or oil meal remaining after the oil is extracted is a highly concentrated and nutritious feed, and is relished by all kinds of livestock.

As an article of food the use of the soy bean in the United States has been very limited. For many years a few food companies have manufactured special soy-bean flour products. The number of such concerns producing soy-bean food products has increased to a considerable extent during the last few years. Soy beans are now being made into breakfast foods, crackers, wafers, soy sauce, bean curd, soy flour, and special flour preparations for various purposes. One of the most recent developments is the manufacture of soy sauce and bean curd from domestic grown beans. This has been found a most profitable industry in some parts of the Corn Belt, and soy sauce has now a fairly extensive market in the United States.

Improved Production Methods

Increased acreage and greater utilization of the soy bean have brought about improved methods in planting, culture, and harvesting. Implement manufacturers, who in the past took no interest in the soy bean, are now actively engaged in a study of the planting, cultural, and harvesting problems of the crop. The development of an efficient method of harvesting the seed crop has been one of the serious problems connected with the production of soy beans. Many types of machines are now on the market, ranging from the single-row harvester to broadcast harvesters of the beater type and the combine harvester like those used in harvesting wheat and other small grains.

Because of this rapid increase in the importance of the soy bean, State experiment stations have greatly extended their investigations of the different feeding problems, such as the value of soy-bean silage, hay, grain, pasture, and oil meal. One of the most outstanding results of this work has been the use of a mineral mixture with the grain and meal. Extensive feeding trials with hogs and poultry have shown that when minerals are added to a soy-bean ration the results compare favorably with those from a ration of tankage and meat scrap.

In the last decade the soy bean has advanced from a position of minor to one of major importance. Previously soy beans were grown only occasionally, usually as a substitute crop when clover or some other crop failed. At the present time the plant is grown regularly for hay, grain, and pasture, and with corn as silage.

W. J. Morse.

SOY-Bean Rotation Increases Rice Yields Greatly

Crop rotation has not been a factor in developing the rice industry in southwestern Louisiana. The pasturing of rice fields after several years of cropping has been the only recognition of the principle of crop succession in this section. Experience has shown that this method is not effective in controlling weeds, especially red rice, the worst weed of the southern rice fields. Red rice seed may remain viable in the soil for at least four years and will germinate only when brought near the surface by plowing and other tillage operations.

Experiments conducted for a period of 14 years at the rice experiment station, Crowley, La., show that weeds can be controlled and

may be eradicated by growing rice in rotation with soy beans. The success of weed control depends upon thorough cultivation. Cultivation that permits weeds to produce seed is not effective. Tillage that is necessary to prepare land for soy beans also aids greatly in reducing weeds. The land should be plowed during the previous winter to a depth of at least 5 inches and disked several times in spring before seeding. By repeated light diskings several germinations of red rice may be obtained and destroyed before the soy beans are sown.

Experiments and the experience of rice farmers who are using this rotation indicate that the Biloxi is better adapted to rice field conditions than any other variety of soy beans that has been tested. (Fig. 213.) This variety should be sown in rows 4 feet apart at the rate of 30 pounds per acre. Seeding may be done with an ordinary corn planter adjusted to drop one or two seeds from 2 to 4 inches apart in the row. The seed should be sown just beneath the soil surface. Deeper seeding is likely to result in a poor stand. Sow not earlier than the last week in May and preferably not later than

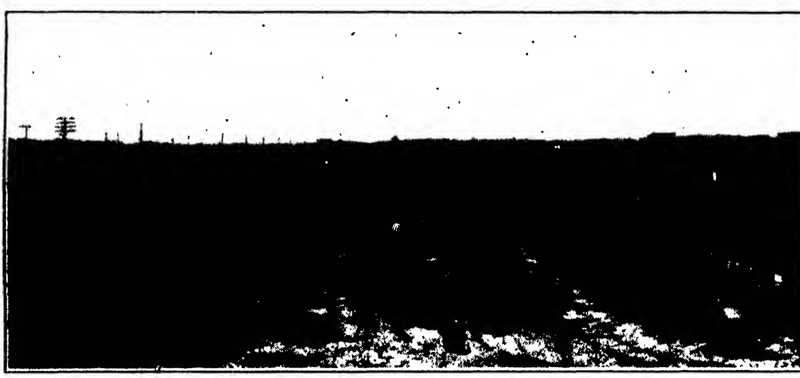

FIG. 213.—A field of Biloxi soy beans growing on typical rice soil in southwestern Louisiana. This field has been so thoroughly cultivated that there are no weeds in it

June 15. Thus sown, the plants are relatively short and bear short limbs that fruit rather heavily. Such plants are easily cultivated and can be harvested with machinery without appreciable loss. Early seeding has little effect on date of maturity, which with the Biloxi normally occurs in early November.

Cultivation should begin as soon as the plants can be readily traced in the row. It may be done with a riding cultivator. By using the disk and other attachments alternately this implement will keep the soil in a condition that will promote the germination of red rice and other weed seeds, the growth from which can be easily killed by later tillage. Cultivation should be frequent and continue as long as weed growth is noticeable.

Weed control is not the only advantage of the soy-bean rotation. Plowing under the soy-bean plants after the beans are harvested adds to the soil a large quantity of organic matter which decomposes rapidly when drainage is good. The upturned soil under these conditions readily responds to tillage in preparing a suitable seed bed for rice. Good seed-bed preparation insures a more thorough destruction of weeds, better germination, a better stand, a stronger root

growth, and larger yield. When the soil is deficient in organic matter such a seed bed is not easily obtained even with extra tillage. Soil fertility also is greatly increased by the decomposed vegetable matter. On the typical rice soil of Louisiana the soy-bean rotation is giving an average acre increase of 10 bushels of a better grade of rice, which is a greater return than is being obtained by the use of commercial fertilizers.

CHARLES E. CHAMBLISS.

SOY-Bean Standards Promulgated for Commercial Crop The phenomenal increase in the production of soy beans during recent years has created widespread interest in this commodity. Production in the United States increased from 2,500,000 bushels in 1920 to 6,517,000 bushels in 1926. With this increased production the saturation point in the demand for soy beans for seed purposes has been reached, especially of the staple varieties.

The commercial possibilities of the soy bean, however, offer a potential outlet for a supply many times the present surplus above seeding requirements. Several mills are now crushing soy beans for oil and meal and others are being built or equipped for this purpose. Research chemists are studying the value of the soy bean and its products for food and other uses, together with methods of converting them into the proper form for such uses. The extent of these commercial uses seems to be limited principally by the supply of the raw product. Production above seeding requirements is increasing steadily and, with the general employment of more efficient and economical methods of growing and harvesting the crop and preparing it for market, the annual supply available for industrial uses should be increased manyfold.

With the commercial supply of a comparatively new agricultural product increasing there naturally arises a problem in marketing. Although there may be an adequate outlet or market for the crop, a definite basis for price quotations is essential in order to insure more equitable returns to the producer and to expedite movement of the crop from the farms. Uniform quality standards are the key to the solution of this problem.

United States Standards Issued

After extensive studies of the various phases of the soy-bean industry, United States standards for soy beans were issued in September, 1925, and recommended for use in the grading and marketing of this commodity. These standards were used as a basis for Federal inspection of the 1925 crop of soy beans at original shipping points in eastern North Carolina with gratifying results. Favorable reaction from growers, shippers, wholesale seedsmen, and oil mills to this initial use of the standards resulted in a demand that the inspection service be expanded in North Carolina and that it be extended to other producing States.

Based on the use of the standards and further studies of the industry, slight revisions were made effective September 1, 1926, chief of which is the addition of a supergrade to take care of extra

high-grade stock for which there is a demand at a premium, especially from the seed trade, and which growers are now producing under normal conditions. Wholesale seedsmen are finding it expedient to purchase their supplies on the basis of the two high grades provided in the standards, and shippers and State agencies are cooperating with Federal inspectors for the purpose of furnishing buyers with authentic supplemental information as to variety and germination whenever requested. Oil mills are buying their soy beans on the basis of the United States No. 2 grade, with a scale of discounts for the lower grades and premiums for the higher grades.

The use of the standards in the purchase and sale of soy beans removes much of the uncertainty regarding values of lots of varying qualities. It eliminates the necessity of submitting samples, which delays a transaction, and speeds up sales. It tends to encourage better farm preparation for market, resulting in larger net returns and more equitable returns to the grower, and to improve the quality of the finished product to the consumer and manufacturer. As a result, impetus is being given to an industry in the making and greater confidence is being shown by farmers in this promising cash crop.

J. E. Barr.

SOY-Bean Varieties Newly Developed for U. S. Farms

The acreage of soy beans in the United States increased from about 500,000 acres in 1917 to over 2,500,000 acres in 1924. This enormous increase in the use made of soy beans in this country has been largely due to the development of better-adapted varieties. The number of real or supposed varieties has increased very rapidly in the United States during the past few years, resulting in much confusion concerning varietal names and characters. In many instances disappointment and loss have been caused to the grower by the lack of reliable information, and the soy bean brought into disfavor in some localities. At the present time about 60 varieties of soy beans are handled by growers and seedsmen in the United States. Varietal names greatly exceed the number of true varieties, for different varieties are often sold under the same name, and different names are often applied to the same variety. It is therefore essential not only to know the name of a desired kind, but also its varietal characteristics in order to prevent substitution in purchasing seed.

Varieties of soy beans are differentiated largely by the color and size of seed, though they also differ in time of maturity, habit of growth, disposition to shatter their seed, disease resistance, oil and protein content, and in yield of forage and seed. They vary also in their adaptation to climate and soil. Some varieties are especially suitable for fertile land, others for less productive land; some for early planting, others for late planting; some for a seed crop, others for forage; some for planting with corn, others for planting with Sudan grass and sorghum. One may find a few varieties or even a single variety adapted to the climate of a certain section which will fill all the local requirements of the crop. No single factor has

greater influence upon the success of the crop than the selection of the right variety to meet the needs and the conditions of the section where it is to be grown.

Only Eight Varieties Grown in 1898

Previous to the numerous introductions made by the United States Department of Agriculture, beginning in 1898, there were not more than 8 varieties of soy beans grown in the United States, namely, Mammoth Yellow, Ito San, Butterball, Guelph or Medium Green, Eda, Ogemaw, Buckshot, and Kingston. All of these varieties were rather limited in adaptation, and at present the Ito San and Mammoth Yellow are the only ones grown to any appreciable extent. In 1907, 23 varieties of soy beans were being grown, and of these 15 were introductions made by the department prior to 1905. Vigorous

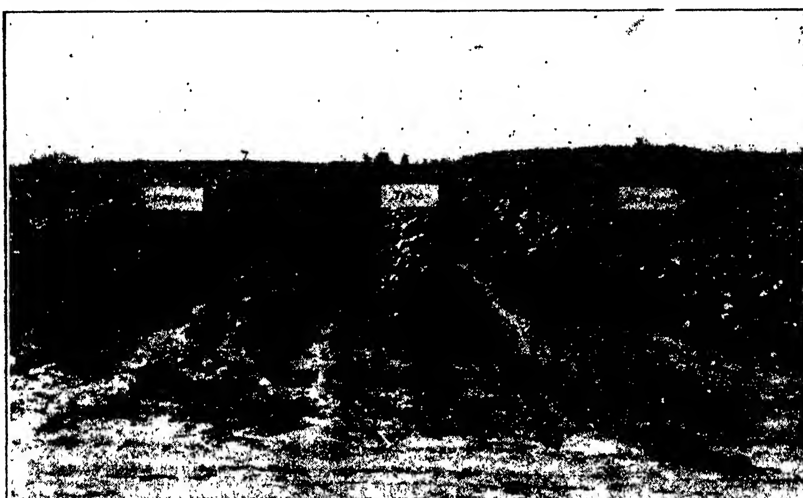

FIG. 214.—Field trials of varieties of soy beans at Clemson College, S. C.

efforts were inaugurated about 1907 to obtain additional varieties through consuls, agricultural explorers, foreign seedsmen, and extensive correspondence with missionaries and others until in 1909 the department had in its trials about 200 distinct varieties; by 1913, 400 varieties; by 1919, 600 varieties, and by 1925, about 1,200 varieties.

The records of introduction indicate that every Chinese village has its own distinct varieties. There is no seed trade in China, consequently local varieties are never widely disseminated. Undoubtedly numerous varieties are yet obtainable from the agriculturally unexplored villages of China, Manchuria, Korea, Japan, and India.

When new introductions are received they are thoroughly tested at Arlington Experiment Farm the first year, and if mixed, single plant selections are made for the second year's test. After three years' work with these selected strains, those giving the best results in comparison with standard varieties are disseminated among the State experiment stations, where they are grown again under care-

ful observation and test conditions. Finally seed is distributed among farmer cooperators who assist the department in its practical field investigations. Varieties that appear promising in these field trials ultimately are assigned suitable varietal names and made available for general use and distribution in the localities to which they are adapted.

One Thousand Varieties Introduced

During the past 20 years more than 1,000 varieties have been introduced into the United States from China, Japan, Manchuria, India, Korea, Siberia, and the East Indies. Several of these have become established in American agriculture, either as direct introductions or as selections from introductions. Others, introduced in the past

FIG. 215.—A field of Otootan soy beans, one of the newer introductions by the United States Department of Agriculture

year have proven so valuable in trials that they are deemed important acquisitions and doubtless will become widely grown. It is universally appreciated and acknowledged by all soy-bean authorities that the annual introductions of soy beans into the United States have been of fundamental importance in the rapid rise of the crop in public favor.

The soy bean lends itself readily to improvement. Considerable breeding work is being carried on by the department, several State experiment stations, and a few soy-bean growers. Although the Orient abounds with varieties, it is evident that they are the result of natural crossing and selection, as very little breeding work has been done. Introductions, for the most part, are admixtures, containing two or more varieties. The progeny of individual plants has shown decided differences in yield of forage and seed, in tendency to shatter, in maturity, and in oil and protein content. Many new varieties

have been introduced into the seed trade of the United States as a result of selection work. Some of these varieties originated from natural hydridization and a few are almost certainly mutations or sports. The most important of such varieties are Chestnut, Dixie, Goshen Prolific, Hamilton, Herman, Illini, Ilsoy, Lexington, Mikado, Minsoy, Peking, Sooty, Soysota, Virginia, Wilson-Five, and Wisconsin Black. Introductions without selection have given us the following important varieties: Biloxi, Black Eyebrow, Chiquita, Columbia, Haberlandt, Hahto, Hoosier, Laredo, Manchu, Mandarin, Morse, Old Dominion, Otootan, Southern Prolific, Tarheel Black, Tokio, Wea, and Yokoten.

Work Justified by Results

The results that have been obtained by this wholesale search have justified the work and expense many times over. When the department work began, the soy bean was a very minor crop, and of importance only in limited areas, owing primarily to the lack of suitable varieties. To-day, its culture, due to a wide range of excellent varieties, is widespread and lends substance to the belief that the soy bean will become one of our major crops.

Table 24 shows the total value of soy-bean seed and hay produced in 1924 by varieties introduced and developed by the department. These data, which do not include the value of the soy beans pastured or fed as silage, indicate that over half (52 per cent) of the total soy-bean hay and seed produced in the United States was obtained from these new varieties. The wide use that is being made of these varieties shows most conclusively the effect this introduction and breeding work has exerted on the development of the soy-bean industry in the United States.

TABLE 24.—*Value of seed and hay of the principal new soy-bean varieties introduced and developed by the United States Department of Agriculture*

Variety	Year introduced	Estimated value [1]			Per cent of value of all soy-bean hay and seed
		Seed	Hay	Total	
Biloxi	1908	$883, 680	$374, 360	$1, 258, 040	3.0
Black Eyebrow	1911	228, 317	346, 412	574, 729	1.4
Ebony	1901	302, 600	231, 640	534, 240	1.3
Hamilton	1906	177, 220	286, 610	463, 830	1.1
Haberlandt	1901	459, 694	398, 000	857, 694	2.0
Laredo	1914	1, 758, 480	291, 300	2, 049, 780	4.8
Lexington	1907	16, 830	28, 800	45, 630	.1
Manchu	1911	1, 794, 135	1, 084, 050	2, 878, 185	6.8
Midwest	1901	2, 561, 375	2, 270, 935	4, 832, 310	11.4
Minsoy	1906	12, 350	11, 250	23, 600	.06
Mandarin	1911	63, 244	14, 125	77, 369	.18
Morse	1906	1, 058, 738	509, 000	1, 567, 738	3.7
Peking	1907	333, 705	321, 375	655, 080	1.5
Tarheel Black	1905	205, 580	176, 195	381, 775	.9
Tokio	1901	53, 935	10, 440	64, 375	.15
Virginia	1906	1, 444, 191	1, 380, 930	2, 825, 121	6.7
Wisconsin Black	1898	168, 510	124, 650	293, 160	.7
Wilson	1906	1, 151, 256	1, 460, 055	2, 611, 311	6.2
Total		12, 673, 840	9, 320, 127	21, 993, 967	52.0

[1] Values given are based on yields of seed and hay in 1924 and the percentage of varieties grown in the different States in 1923. Data obtained from reports of the Bureau of Agricultural Economics.

W. J. MORSE.

STARCHES and Other Finishes for Fabrics Starch and other materials are used in the laundry in the attempt to restore to washed fabrics the finish given by the manufacturer to the new goods. Of course, in many cases he applies an elaborate mixture and uses heavy hot rollers. Thus he gives a finish that can never be reproduced in the home or even by the small establishment that refinishes damaged and soiled fabrics. These attempts, however, would be far more successful if more were known about the different starches and materials for finishing and how they act on different fabrics. Then instead of fabrics looking "laundered," as they often do now, they would look and feel much more as they did when new.

An ideal laundry starch should give the desired "feel" and stiffness, should adhere strongly and penetrate well into the material, not cause white materials to appear muddy or yellow, and not dull the colors of dyed fabrics. The starches used in laundry work are corn, wheat, rice, potato, and occasionally sago and tapioca. In the United States, corn is by far the most widely used because of its great abundance, although the others are frequently employed where special finishes are desired. However, there are a number of varying ideas and opinions as to the results obtained by the different starches used alone and in combination. Statements have been made attributing rice-starched fabrics with a peculiar harsh "feel," whereas another group recommends it heartily for use on infant's garments and dainty lingerie. Terms ranging all the way from a "soft," "full," "mellow" to a "harsh," "rough," "boardy" feel have been used to describe the effect of wheat sizing. Potato starch forms a very clear paste and is thought by many to give a transparent finish which is especially desirable for dyed fabrics.

No Testing Instruments

At present there are no instruments available for testing these properties of starch. In fact, the very terms describing the effect of the different size mixtures are so vague that they convey conflicting ideas. "Soft," "pliable," "harsh," "boardy," "smooth," and "crisp" are some of the words by means of which an attempt is made to compare different finishes. None of them carries a definite meaning to the person who is judging. Standard terms for describing the physical properties of textile fabrics and an instrument to measure each of these properties are needed to study the starches now on the market as well as the newer types such as canna and tree fern which are being introduced. With but a few tests their suitability for fabric sizing could then be determined. The work being done in the department will be a contribution along this line.

Starches have been prepared from corn, wheat, potatoes, and rice of known variety and grown under known conditions. Fabrics starched with paste made from these have been tested for stiffness. Wheat starch caused the greatest stiffness. Fabrics starched with rice and corn were less stiff than those starched with wheat, although they resembled one another very much. The addition of a little borax added greatly to the stiffness of fabrics starched with corn

starch. When used alone borax gave no apparent stiffness to the fabric, although it has been recommended by some as a good stiffening agent. The addition of fats, oils, and waxes to the starch paste resulted in a less stiff fabric.

Sometimes starched garments look mussed almost as soon as they are put on, for one reason because the starch is not pliable. The pliability of the different starches is therefore being measured as well as the stiffness. Starch paste, typical of that used in laundry work, is prepared and spread over a very smooth surface to dry. The thin, dry film formed in this way is peeled off and cut into narrow strips which are folded by an instrument devised for that purpose. The number of folds which can be made before the strip breaks is recorded and gives a means of comparing the different starches and starch mixtures.

In many cases materials other than starch are more desirable to restore a crip new finish to the fabric. A very dilute solution of gelatin, made by dissolving 1 ounce of gelatin in 1 pint of water and finally diluting this solution 8 to 15 times, is an excellent dressing for silk, wool, and cotton materials such as organdies, voiles, and batistes. A dilute glue solution is also good but can not be used on white or light fabrics because of its color.

Glue and Gelatin for Dark Stuff

Both glue and gelatin, because of their transparency, are to be preferred to starch on dark fabrics where the starch usually leaves undesirable white splotches. One ounce of gum arabic dissolved in 1 pint of water and this solution diluted with from 5 to 10 parts of hot water is a very satisfactory finish. A gum tragacanth solution, one-sixth ounce to the pint of water and diluted 8 to 12 times accomplishes the same purpose. Too much of the gelatin, glue, or gums will, however, cause the fabric to feel sticky.

Other properties of the typical starch pastes and finishes used for laundry work will be studied. As a result methods will be found for laundry starching that will restore so far as possible the finish that fabrics had when new.

Esther C. Peterson.

STINKING Smut of Wheat—Progress in Its Control

A new era in the control of stinking smut of wheat began in 1917 when an Australian investigator announced that he had successfully prevented this disease by dusting seed wheat with copper carbonate. This treatment not only killed seed-borne spores of the fungus which causes this disease, but did not injure germination of the seed wheat. The United States Department of Agriculture, in cooperation with the California Experiment Station, tried this method and found it more satisfactory than either the copper-sulphate-lime or formaldehyde treatments formerly used.

Realizing the importance of this discovery, plant pathologists throughout the wheat-growing sections of the United States began

active research in order to determine whether or not copper carbonate would give satisfactory control under varying local conditions. As this work progressed and it was found that the treatment was an improvement on the methods formerly used for disinfecting seed grain, the effort was made to bring it into common use. For example, in 1921, the extension pathologist for the State of Washington arranged for ten 1-acre demonstrations. The treatment was so successful that by 1924 over a million and a half acres were sown with treated grain in that State. The good news spread, and soon many farmers in Oregon, Montana, and Idaho had discarded the wet seed dips and were using copper carbonate.

As a result of the experience gained from practical farm trials in the Western States and from experiments of plant pathologists

FIG. 216.—When treating seed wheat with copper carbonate for stinking-smut control a mask must be used to avoid inhaling copper dust

knowledge concerning this treatment and convenient methods for its application grew rapidly. It was found that in addition to being an effective agent for killing the smut spores carried on seed wheat, the copper carbonate treatment has certain other advantages. W. H. Tisdale, pathologist in the Bureau of Plant Industry, outlines several of these in Department Circular 394:

It does not injure germination. In fact, treated seed often germinates better than untreated seed.

Seed may be treated whenever convenient and stored without injury. The wet methods do not permit this.

Dusted seed may be planted at any time in dry or moist soil.

Very little labor or expense is required to treat seed for large acreages.

Copper carbonate protects stored grain from attacks by weevils. Rats and mice will not eat treated seed if there is untreated grain in the storehouse on which they can feed.

In the same circular warning is given with regard to limitations of copper carbonate and certain precautions are outlined to observe in its use.

The development of this improved method of treating seed wheat was most timely. Deep concern with regard to the wheat smut situation has not been limited to farmers. It has been felt by all who have an interest in the handling of wheat or the manufacturing of wheat products, since the quantity of smutty wheat received on the market has steadily increased during recent years.

This means a threefold loss. As wheat marked "smutty" under the Federal grain standards can not satisfactorily be ground into

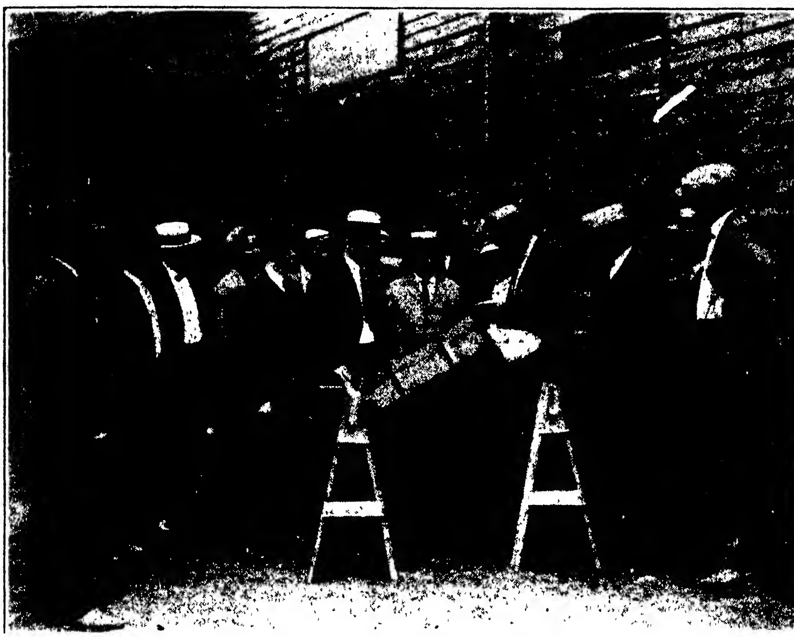

FIG. 217.—Community demonstration in treating seed wheat with copper carbonate to control stinking smut

flour until the smut has been removed by the use of special machinery, discounts on such grain range from a few cents to 20 cents or more per bushel, the price being determined by the amount of smut present. This, however, is only the final effect of the disease.

Threshing Machine Explosions

Back on the farm there is the danger of threshing-machine explosions during the harvesting of crops with a high percentage of disease. Separator explosions at threshing time owing to the ignition of clouds of smut dust in the separator may result in heavy property damage.

The initial loss due to the disease, however, is felt directly by the grower in a marked reduction in yield. Estimates of this type of damage caused by stinking smut in wheat during the years 1917–1924 indicate that losses in the United States approximate from

5,000,000 to 26,000,000 bushels a year. The average estimated reduction in yield during this period was over 14,000,000 bushels annually. The highest loss was in 1924 when something more than 26,000,000 bushels of wheat were destroyed in the field by stinking smut.

Control Method Widely Accepted

Considering these inroads which smut makes in the farm income, it is not surprising that wheat growers are adopting the new and better control method with great enthusiasm. In 1858 when a dilute solution of copper sulphate was first recommended for treatment of wheat seed, and again in 1897 when formaldehyde came into use, there were no county agricultural agents to assist farmers in learning to use the chemicals. Years passed and yet many growers were unacquainted with methods of using them.

As a contrast to this we have the work done during 1926. Under the leadership of extension pathologists and agronomists and supported by farmers' organizations, railroad agricultural development groups, wheat improvement associations, millers' associations, chambers of commerce, newspapers, and other business agencies, over 500 county agents set to work with the aim of decreasing losses due to stinking smut of wheat. Farmers were taught to build and use treating machines. Assistance was given to millers, grain dealers, elevator managers, and others who desired to render service to their communities by doing custom treating. Manufacturers of copper carbonate and treating machines have kept pace with the demand created so that the acreage sown with treated grain increased materially in both spring and winter wheat areas. A disease-control method which seven years ago was unknown to farmers in this country has now come into widespread use.

FRED. C. MEIER.

SWEET Clover for Permanent Pasture Land

Sweet clover, as ordinarily handled, is a rotation or temporary pasture plant. It is grazed from midsummer of the first year until midsummer of the second year, when it matures. The animals must then be shifted to another field containing a new seeding. This practice is a common and profitable one and probably provides more high-grade pasturage per acre than any other common system of grazing. Every field, however, must be well fenced and there must be lanes connecting them. Every field also must have water and shade. Some of the fields often are far from the barns. Most important, dependence must be placed each year on a new seeding, and seedings sometimes fail. Consequently, much interest is expressed in means of utilizing sweet clover in fields of more or less permanent character.

The simplest plan is to plant a field with sweet clover and permit the crop to go to seed. After several years the surface soil becomes so full of sweet clover seed that a volunteer crop appears each year. Fields of this kind, which have been in sweet clover continuously for 10 or more years, are not uncommon. The chief objection to the plan is that, unless grazed very heavily, the fields do not contain

young and old plants in the right proportion to give continuous feed. In both wild and cultivated stands, if at all dense, the second-year plants smother the seedling plants and the two rarely occur together. To overcome this condition seed is sometimes sown each year for the first three or four years, but this does not help greatly, except to build up a stand more quickly.

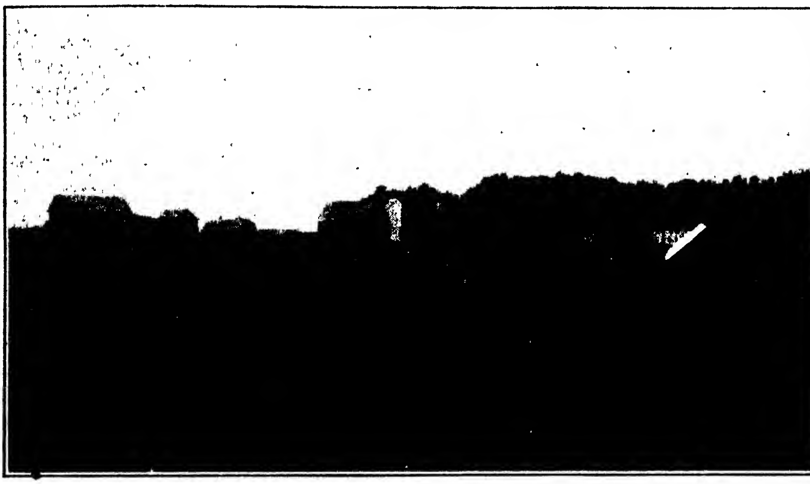

FIG. 218.—A pasture consisting of sweet clover and quack grass that has been grazed heavily with sheep for three years

FIG. 219.—A field in Oklahoma that has been in sweet clover continuously for 5 years and supports nearly 1 animal per acre for 5 months. Adjacent grass pastures support 1 animal on 2 acres for 6 months

Yellow Variety Finds Favor

A better plan is to divide the field in halves and plant and graze them alternately. By many it is believed that the yellow sweet clover is better adapted to permanent grazing than the white variety, because it produces seed freely, even if pastured close to the ground. By others a mixture of the two varieties is favored as this lengthens the pasturing season 7 to 10 days at each end.

Sweet clover may often be used to improve the carrying capacity of an old or worn-out grass sod. In doing this it is necessary to bring the sweet clover seed actually into contact with the soil. If the seed is merely scattered over the sod, most of it is held off the soil by the old grass and only a few seedlings take root. On tillable land the seed can be cut into the sod with a disk drill. Another plan is to burn off the old grass in the spring before sowing the seed. On western prairie sod a good practice is to plow wide but shallow furrows through the sod about 3 feet apart. This provides fresh soil on which to sow the seed. The presence of the sweet clover gradually improves the grass.

Pastures of excellent quality that last several years may be made by sowing mixtures of sweet clover and other forages. One such mixture contains 2 pounds yellow sweet clover, 2 pounds white sweet clover, 3 pounds orchard grass, 2 pounds redtop, and 1 pound Kentucky bluegrass. Brome grass should be substituted for the other grasses in the northern Great Plains and Japan clover for the redtop and bluegrass in the Southern States.

L. W. Kephart.

SWEET Clover of New Varieties Proves Useful

The recent rapid increase in the culture of sweet clover has aroused interest in the possibility of developing new varieties better suited to the different uses to which the plant is put. Interest has centered principally in the production of better hay varieties, since the common sweet clovers, espe-

Fig. 220.—Some sweet clovers furnish pasturage much later in the season than others. On November 24, 1925, the variety in the center was still green, while the varieties on either side had been killed to the ground four weeks earlier

cially the white-flowered species, are too coarse and heavy to make good hay from the second year's growth. Several good hay varieties

have already been developed, notably the early-flowering Grundy County, Crystal Dwarf, and Early Dwarf varieties of white sweet clover and the Albotrea and Switzer varieties of yellow sweet clover.

A very interesting recent development in this direction has been the finding, at two of the western Canadian experiment stations, of a type of sweet clover bearing many more and finer stems than the common sorts, and in fact so closely resembling alfalfa in appearance that it is easily mistaken for that plant. This is a very important discovery, and bids fair to add a distinct new type of forage plant to our list.

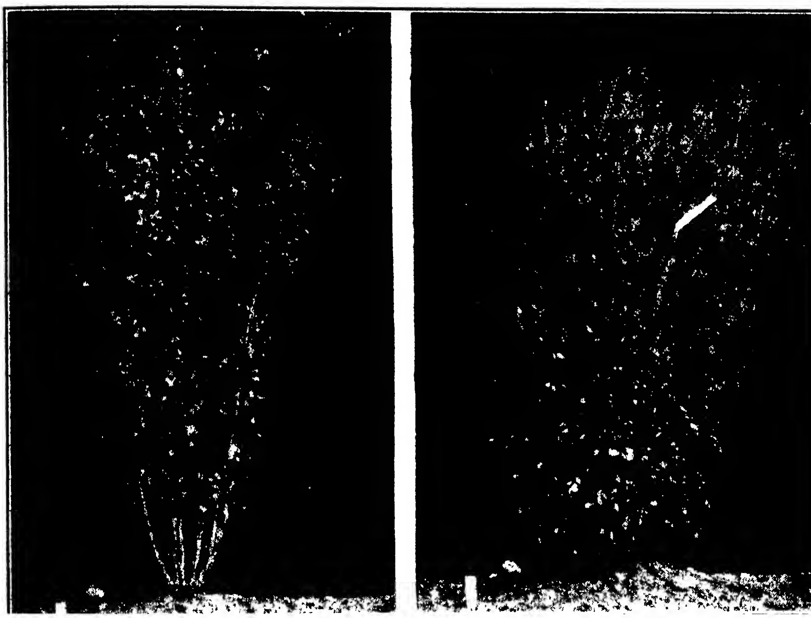

FIG. 221.—Sweet clovers differ greatly in leafiness and coarseness of stems. These two plants were taken from the same field of yellow sweet clover

The need for sweet clovers which are more winter-hardy has been met with Arctic, or Hansen's Siberian, a white-flowered variety from western Canada, and Albotrea, also from Canada. A sweet clover much better suited than common sweet clovers to the cold, dry climate of the northern Great Plains appears to have been found in an unknown yellow-flowered variety developed at the Redfield, S. Dak., field station of the United States Department of Agriculture.

Variety Sought for Acid Soils

Several persons are endeavoring to find a sweet clover that will grow on acid soils, the need of lime in the soil being a serious hindrance to the culture of the crop in many localities. Other persons are trying to develop a sweet clover especially suited to withstanding the extreme drought and hot winds of the southern Great Plains. It is too early to say whether these efforts will succeed.

A type of sweet clover that would be exceedingly useful is one that would remain green late in the fall, start growth early the next spring, and remain green and in good feeding condition well into the following summer. Such a sweet clover would be immensely valuable for pasture purposes. A number of experimenters, both on farms and at experiment stations, have approached this type with selections of common white sweet clover. Perhaps even better results will come from tests now being made with species and varieties brought in from Europe and eastern Asia, one such species this year having remained green six weeks later than any sweet clover heretofore grown.

All sweet clovers are exceedingly variable in their habits of growth, and many distinct types and forms may be found in nearly any sweet-clover field (fig. 221). Although it would not be desirable to flood the country with new sweet clovers, there is a legitimate opportunity to develop useful types of proved superiority.

L. W. KEPHART.

SWEET Corn Quality Due to Farm and Factory Influences Increased competition among the canners of sweet corn has given impetus to the study of quality in the canned product and efforts are being made to determine just what constitutes quality and what those factors are by which it is affected.

Quality is influenced by two sets of factors: (1) Those which determine the character and condition of the corn as it is delivered at the factory, and (2) those concerned with cannery practices. The conditions at the factory which affect the quality of the canned corn are generally understood, and canning methods are fairly well standardized, so that these require no particular attention. The factors influencing the quality of the raw corn, however, are not so well understood.

For several years workers in the Department of Agriculture have been making a special study of this subject. Field and laboratory experiments have been made upon all the commercially important varieties of sweet corn as well as representatives of most of the other types; studies have been made of the effect of seasonal and climatic factors upon the corn; and practical canning experiments have been made on the corn at different stages of maturity. The results of these experiments have thrown considerable light upon the problem.

From these it would appear that first of importance in determining quality in corn is the tenderness or toughness of the kernel hull. This varies to some extent with the different varieties, but is particularly affected by the degree of maturity of the corn. The toughness increases very rapidly as development of the kernels proceed, being most rapid during the seasons of high temperature. In cool weather the increase is much less rapid. From the standpoint of toughness the period during which first quality corn can be packed is very short.

Proportion of Kernel Parts

Next in importance is the nature and relative proportions of the different constituents in the kernel. In the sweet corn these are com-

posed principally of starch and dextrin. These increase in amount as the growth of the kernel proceeds and give to the corn the desirable body or consistency. The dextrin or dextrinlike substances are responsible for the creamy texture found in first-quality corn.

Although there are different kinds of sugars in sweet corn, that which furnishes the natural sweetness in corn at canning maturity is principally sucrose or cane sugar. Since this may be added at the time of canning with fairly satisfactory results, natural sweetness is considered as third in importance.

Natural flavors appear to be next in importance. These do not vary greatly in the different varieties of corn when at canning maturity, though there are distinctive differences in the flavors of the white and the yellow varieties. When corn is too mature the desirable flavor disappears and one less desirable takes its place.

These various properties are directly affected by the degree of maturity, and in the packing of first-quality corn maturity must be given first consideration.

Tests to determine the relative merits of the different varieties have shown that the variety factor is not important in determining quality, any of the standard varieties yielding a first-class product if canned at the proper stage of maturity.

Seasonal and climatic factors, particularly that of temperature, through their influence on the rate of development, have a profound effect on the quality of corn as it appears in the can. High temperatures speed the maturing processes and shorten the time during which corn may be satisfactorily handled.

C. A. MAGOON.

SUGAR-Cane Varieties That Resist Disease It has been increasingly apparent during the season of 1926 that, owing to the combination of low prices for sugar and low yields of sugar cane, many producers of this staple commodity in the South will be forced to discontinue the planting of cane unless some effective remedy is applied at once. The cane planters that are affected are not only the marginal producers but include some of the most experienced and successful growers utilizing the best lands. Increased per-acre production, which of course means lowering the cost of production, is the only course by which the situation can be alleviated until a readjustment of the world's production of such to meet the world's requirements establishes a more satisfactory price.

One of the most apparent causes of declining yields in the cane fields is the presence of several destructive diseases of the cane, which for a number of years have been accumulating until there now exists on many plantations a condition of disease saturation, where not a healthy plant is to be found in whole fields. That these diseases are a major factor contributing to the decline in yields is easily demonstrable by experiment. A simple and effective means of relief is offered by the substitution of disease-resisting varieties for the old varieties of cane.

Resistant Varieties Collected

Fortunately, a number of such disease-resisting varieties have been collected by the Department of Agriculture and tested, both in

small experimental plats and on a large scale under commercial plantation conditions. Increased yields of the resistant varieties indicated by these tests range from 30 to 50 per cent greater yield of sugar per acre than that produced by the old varieties. The varieties used in these tests were P. O. J. 36, 213, and 234, all of which are hybrid varieties imported from Java, and Cayana, a variety of the Chinese group of canes. Owing to the relatively low purity of the juice in the case of Cayana, it is especially adapted to sirup making.

Many other promising disease-resistant varieties are being tested by the department, but only the varieties mentioned have been commercialized. They are available in quantities sufficient to plant one-fifth to one-fourth of the total acreage in Louisiana this year, and of course if they are extended to any degree this means there would be ample seed next year to plant the entire acreage devoted to cane in the new varieties. Practically all of this represents the increase from a few cuttings of the varieties P. O. J. 36, 213, and 234, which were turned over to a plantation near Houma, La., in 1922 and 1923.

The qualities of these cane varieties that commend themselves to the sugar planter are:

(1) Resistance to mosaic and root disease resulting in increased yields as compared with the old varieties.

(2) Economy in planting material. Only 1 to 1½ tons of seed to the acre is required as compared with 4 to 6 tons of D-74 and Purple canes. This reduces costs of production very appreciably, as the value of seed cane represents a large proportion of total costs.

(3) Ability to ratoon over a longer period of years. Satisfactory stubble crops have been obtained with these varieties in other countries for seven or eight years, and, although it is yet too early to say with certainty, the indications are that double the number of stubble crops now obtained can be expected with these new varieties in Louisiana.

(4) Increased fiber production. About 20 per cent increased yield of bagasse has been reported for the new varieties. With increased utilization of the material for the manufacture of lumber substitutes, it has become an exceedingly valuable by-product.

(5) Resistance to hurricane damage. It has been demonstrated that Cayana scarcely lodges at all and P. O. J. 234 straightens up after lodging in windstorms that practically ruin varieties like D-74 by snapping off the more brittle stalks.

(6) Tolerance of cold. Where observations have been made on P. O. J. 36, 213, and 234 in other countries and on Cayana in this country a very definite tolerance of temperatures fatal to other varieties has been noted.

Desirable Qualities Observed

The desirable qualities of these varieties have not gone altogether unnoticed in Louisiana. One plantation near Houma increased the seed of these varieties to the greatest possible extent, even in the face of much adverse criticism. The American Sugar Cane League, made up of cane growers in Louisiana, has lately made a strong effort to establish them in the State. Largely as the result of efforts

by these two agencies, a remarkable increase in the quantity of available planting material of the new varieties has been effected.

E. W. Brandes.

SUGAR-Supply Sources of the United States In the five years 1921–1925 more than half of the sugar which became available for consumption in continental United States was the product of the island of Cuba. Second in volume to the Cuban supply in every year of the five was the domestic production of beet sugar. Hawaii and Porto Rico were, respectively, third and fourth in every year of the five in the volume of sugar supplied. In 1921 and 1922 domestic cane sugar was the fifth largest source of supply, with the Philippine Islands sixth; but in 1923, 1924, and 1925 the supply from the Philippines was larger than that from Louisiana. Sugar from all other sources of supply amounted to only 4 per cent of the total in 1921, 3 per cent in 1923, 1½ per cent in 1924, and less than 1 per cent in 1922 and 1925.

The gross supply of sugar by origin for each of these years, in terms of centrifugal raw sugar, is shown in Table 25. But in order to arrive at the net supply, deductions must be made for sugar exported or shipped back to the noncontiguous territories or possessions. The sugar exported is practically all refined sugar which has previously been imported in raw form. It is impossible to determine the exact origin of this sugar which passes through American refineries and goes out again to foreign markets, but it is practically all duty-paid sugar, for the quantity of sugar on which an export drawback is paid is in every year approximately equal to the domestic exports. In fact, the total on which drawback was paid in the five years 1921–1925 was actually slightly in excess of exports in those years. In the long run, however, the excess should be on the other side, at least by the quantity exported to the Virgin Islands and some minor border exports of true domestic sugar on which no drawback can be collected. Since the quantity of sugar on which drawbacks are paid is so close to the quantity of domestic exports, and since the official reports give the raw equivalent of the sugar on which drawbacks are paid, this raw equivalent rather than domestic exports of refined sugar has been deducted from imports in order to arrive at a figure for net supply. Table 26 shows the net supply made available for consumption in each of the five years, 1921–1925. This table was derived from Table 25 by deducting pro rata the raw equivalent of exports on which drawback was paid from the duty-paid imports and deducting actual shipments of refined sugar to Hawaii and Porto Rico and actual exports to the Philippines and Virgin Islands from the shipments and imports from these islands. No deductions have been made from the supplies of domestic sugar, as it is not believed that any appreciable quantity of this sugar is ever exported. No account is taken of annual shipments of about 3,000 tons to Alaska, so in this computation Alaska is in effect taken as a part of continental United States.

Table 27 is a percentage table based on Table 26, showing the relative importance of the several sources of sugar supply in each of the five years considered.

TABLE 25.—*Sources of sugar supply for continental United States,[1] calendar years 1921 to 1925, inclusive*

Origin	1921	1922	1923	1924	1925
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Cuba	2, 590, 073	4, 527, 145	3, 426, 343	3, 692, 448	3, 923, 094
Domestic beet	1, 074, 000	726, 000	947, 000	1, 172, 000	981, 000
Hawaii	541, 128	567, 734	519, 195	676, 886	755, 159
Porto Rico	469, 296	360, 332	342, 157	392, 787	600, 412
Philippine Islands	164, 877	274, 809	237, 886	339, 007	492, 774
Domestic cane	327, 701	295, 735	162, 023	88, 483	197, 528
Dominican Republic and Haiti	134, 226	1, 669	41, 349	7, 755	124
Central America	26, 590	22, 804	32, 213	16, 150	16, 877
Peru	10, 247	3, 243	50, 500	31, 819	1, 050
Mexico	11, 850	20, 902	14, 320	33, 199	14, 127
Virgin Islands	6, 313	5, 703	1, 752	2, 382	10, 543
Other imports	39, 575	4, 536	50, 306	15, 113	1, 174
Total gross supply	5, 395, 876	6, 810, 612	5, 825, 044	6, 468, 029	6, 993, 865
Exports as shown by drawback payments	557, 859	1, 083, 315	276, 368	254, 739	407, 693
Shipments to Hawaii	4, 812	4, 730	4, 545	2, 732	2, 142
Shipments to Porto Rico	3, 421	4, 426	3, 025	1, 720	1, 896
Exports to Philippines	1, 083	2, 000	414	287	362
Exports to Virgin Islands	609	535	243	353	302

[1] Including Alaska.

TABLE 26.—*Net supply of sugar of continental United States,[1] calendar years 1921 to 1925, inclusive*

[In thousands—i. e., 000 omitted]

Origin	1921	1922	1923	1924	1925
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Cuba	2, 076	3, 457	3, 164	3, 445	3, 519
Domestic beet	1, 074	726	947	1, 172	981
Hawaii	536	563	515	674	753
Porto Rico	466	356	339	391	599
Philippine Islands	164	273	237	339	492
Domestic cane	328	296	162	88	198
Dominican Republic and Haiti	107	1	38	7	(2)
Central America	22	17	30	15	15
Peru	8	2	47	30	1
Mexico	10	16	13	31	12
Virgin Islands	6	5	2	2	10
Other imports	32	4	46	14	1
Total net supply	4, 829	5, 716	5, 540	6, 208	6, 581

[1] Including Alaska. [2] Less than 500 short tons.

TABLE 27.—*Net supply of sugar of continental United States.[1] Per cent from each source, 1921 to 1925, inclusive*

Origin	1921	1922	1923	1924	1925
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Cuba	43. 0	60. 5	57. 1	55. 5	53. 5
Domestic beet	22. 2	12. 7	17. 1	18. 9	14. 9
Hawaii	11. 1	9. 8	9. 3	10. 9	11. 4
Porto Rico	9. 6	6. 2	6. 1	6. 3	9. 1
Philippine Islands	3. 4	4. 8	4. 3	5. 5	7. 5
Domestic cane	6. 8	5. 2	2. 9	1. 4	3. 0
Dominican Republic and Haiti	2. 2	(2)	. 7	. 1	(2)
Central America	. 5	. 3	. 6	. 2	. 2
Peru	. 2	(2)	. 9	. 5	(2)
Mexico	. 2	. 3	. 2	. 5	. 2
Virgin Islands	. 1	. 1	(2)	(2)	. 2
Other imports	. 7	. 1	. 8	. 2	(2)
Total net supply	100. 0	100. 0	100. 0	100. 0	100. 0

[1] Includes Alaska. [2] Less than 0.05 per cent.

G. B. L. ARNER.

STEM Rust in Many Varieties Attacks Grain Black stem rust looks the same whether it be on wheat, oats, barley, rye, or any one of the 75 or more different kinds of grasses on which it can develop. But one can not tell from the appearance of the rust how it will behave. There are different varieties and physiologic forms of this rust.

There are at least six varieties of black stem rust, just as there are many varieties of wheat. These rust varieties differ in their ability to cause rust on the small grains. For instance, the wheat variety of rust can spread to wheat and barley but not to rye and oats. The rye variety can cause rust on rye and barley but not on wheat and oats. Still another one, the oat variety, can cause rust on oats but not on wheat, barley, or rye. There are at least three other varieties, each one able to infest certain grasses but not others.

Not only that, but each one of these rust varieties in turn consists of physiologic forms which differ in their ability to attack different varieties of the small grains. The variety of stem rust on wheat really consists of about 40 distinct physiologic forms; that on oats of 5 or 6; and that on rye of at least a dozen. Some of the forms of the wheat variety of rust attack certain varieties of wheat but not others. For example, Kanred wheat is immune from about a dozen of the forms, moderately resistant to a few, and completely susceptible to the others. Marquis wheat is completely susceptible to many of the forms but highly resistant to many others. The durum wheats as a class are resistant to many of the forms but completely susceptible to others. The same thing is true of the behavior of varieties of oats and rye to the physiologic forms of the rust varieties attacking these crops.

Peculiar Behavior Explained

This parasitic or physiologic specialization of the black stem rust explains many things. Many people often wonder why grain fields may be heavily rusted near barberries in one year and not in the next. It often is due to the presence of different varieties of rust. For example, if rusted wheat is grown near barberry bushes one year, oats may be free from rust in the same field the next year although the barberry bushes may be heavily rusted. This is perfectly natural, as the rust on the barberries probably will be the wheat variety, which does not infect oats.

The same variety of grain may behave differently with respect to rust in different regions in the same year, or in the same region in different years. Marquis wheat usually is heavily rusted in the hard red spring wheat region if weather conditions are favorable for the development of rust. But in the Southern States and in some of the Pacific Coast States it usually is very resistant to rust, because the physiologic forms of the wheat variety of rust normally occurring in those regions can not infect Marquis. Kanred wheat is immune from rust in some regions but completely susceptible in others, also because of the occurrence of different physiologic forms of the wheat variety of rust in the different regions.

The same variety of wheat also may behave differently toward rust in the same region in different years. For instance, the durum wheats usually are resistant to rust in the upper Mississippi Valley,

because in many years there are few if any physiologic forms in that region which can infect them. But in 1923 the durums rusted heavily. The explanation was simple: The most abundant rust form that year was one which attacks the durums heavily.

Much Crossing Required

This existence of different varieties and forms of the stem-rust fungus is very important in attempting to develop rust-resistant varieties of the small grains. No varieties of bread wheats, durums, or emmers are resistant to all of the physiologic forms of the wheat variety of stem rust. This means, therefore, that it is necessary to cross and recross many varieties in attempting to get some which are resistant to all or most of the physiologic forms. Since the discovery of the peculiarities of the rust parasite, this work is being done on a sound, scientific basis, and excellent progress already has been made. And still greater progress can be expected in the future.

It is important to know whether the varieties and physiologic forms of the stem-rust fungus remain constant or whether they change their parasitic abilities. If they change rapidly, we must face a constantly changing problem in breeding resistant varieties. So far there is no evidence that they do change rapidly. But more investigations must be made to find out whether they do. This much is certain, however: There are physiologic forms of the different varieties of rust in foreign countries that have not yet been found in North America. Some of them are more virulent than any yet found in our grain-growing regions. It is very important, therefore, to avoid introducing into this country rusted straw or any other plant parts from foreign countries which might carry varieties or physiologic forms of the rust which are not yet known to occur in the United States.

E. C. Stakman.

SWEET Potatoes in Canned Form Find New Uses

The sweet potato is produced in large quantities and is a highly nutritious and palatable food, but owing to its perishable nature and poor shipping qualities its use is rather restricted, and thousands of households are still unaware of the delightful properties of this really excellent food. The sweet potato is adapted to a wide variety of culinary uses. Once this has become realized and the potato has been made available in all parts of the country, and at all seasons of the year, it should become tremendously popular.

The introduction of canning methods has overcome the disadvantage of poor shipping quality and canned sweet potatoes of excellent quality have been on the market for some time. It has not been feasible in this canned product, however, to duplicate all the desirable properties of the fresh product.

There are two types of sweet potatoes, and, as might be expected, diverse opinions regarding them. The one when cooked is rather dry and mealy and the other is soft and moist. In the South the moist type is better known and is probably more widely used for table purposes, while in the northern section of the country, in general, the drier sorts are preferred. This is due no doubt to the fact

that the moist varieties do not enter so generally into the northern markets.

Many Dishes Possible

A considerable variety of delightful dishes are prepared from the sweet potato, ranging all the way from the plain boiled or baked potato to the candied slices, sweet-potato custard, puddings, pies, etc. Few persons realize how closely the southern sweet-potato pie and the New England pumpkin pie resemble each other both in appearance and in flavor.

The full natural sweetness of the sweet potato develops only after a period of storage, the sweetness being due primarily to the presence of sucrose or cane sugar which is formed during this storage period. It is customary, therefore, to store the potatoes in order to obtain this desirable sweetness.

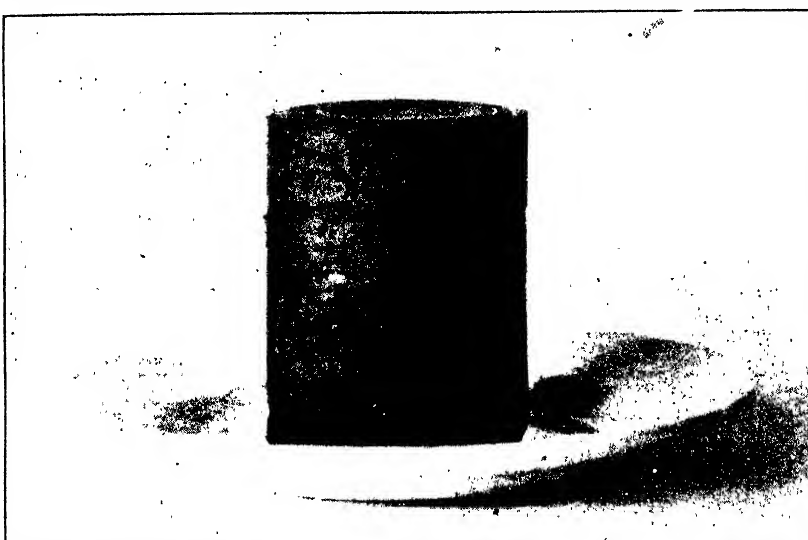

FIG. 222.—Nancy Hall sweet potatoes canned immediately after digging. This product may be sliced and used like fresh potatoes

During the storage period other changes also occur within the potato which greatly affect its table quality. When freshly dug sweet potatoes are cooked the product is always firm and dry, whereas that from the stored potatoes is much softer, and varies all the way from rather dry to very moist in character. For instance, in the Big Stem Jersey, Yellow Jersey, and others of the Jersey group, the changes are not so pronounced and the cooked potatoes are rather dry, but in the Nancy Hall, Porto Rico, Southern Queen, and others of this type, the natural alterations are greater and the cooked potatoes are very soft and moist.

Both Kinds from One Potato

Bearing in mind the preferences of the different users for a dry potato on the one hand, and a moist potato on the other, workers of

the Department of Agriculture have taken advantage of these changes taking place during storage, and by a series of practical canning experiments have shown that it is entirely feasible to produce both a dry and a moist canned product from the same potato. By canning the freshly-dug potatoes of such desirable varieties as Nancy Hall, Porto Rico, Gold Skin, etc., one may obtain a product very attractive in appearance and flavor and one that may be sliced for

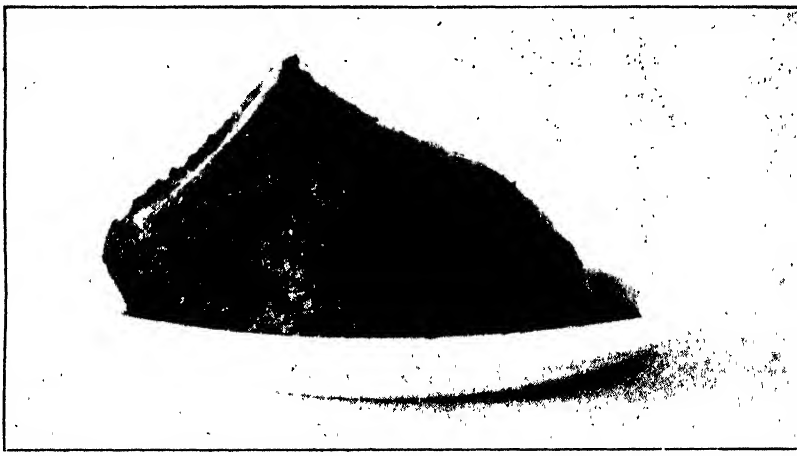

FIG 223.—Nancy Hall sweet potatoes canned after the usual storage period. This product is perfectly adapted to the making of puddings, pies, etc.

sauteing, candying etc., just as satisfactorily as the fresh potato (fig. 222), and by canning the same variety after the usual storage period a soft moist product may be obtained which is very well adapted to the making of puddings, pies, etc. (fig. 223).

Thus, canned products perfectly well adapted to every culinary use to which the fresh sweet potato is put may be made available everywhere and at all seasons.

C. A. MAGOON.

SWINE Erysipelas Identified with "Diamond Skin" Swine erysipelas has been known to exist in European countries for many years, but was not recognized as such in the United States until a comparatively recent date. Through investigations begun during 1920 by the pathological division of the Bureau of Animal Industry it was found that the so-called diamond-skin disease of swine, long known in this country, is a chronic form of swine erysipelas. The erysipelas germ was isolated from the skin lesions in a number of cases.

Further investigations have demonstrated conclusively that swine erysipelas in the acute form also exists in the United States. In this form the symptoms are somewhat similar to those seen in acute hog cholera. In fact the similarity of the symptoms in these two diseases suggests the possibility that, in some instances, there may have been losses from swine erysipelas which was mistaken for hog cholera. It

has also been suggested that the " breaks " which sometimes occur in herds following immunization for the prevention of cholera may have been due in some instances to swine-erysipelas infection. We have no definite information at the present time regarding either of these possibilities.

"Diamond-skin disease," or the mild form of swine erysipelas, is manifested chiefly by the appearance of square or diamond-shaped, highly reddened areas on the skin and is of common occurrence in this country. Present knowledge regarding the prevalence of the acute form of the disease indicates that thus far it has been more or less of a sporadic nature, or confined, in most instances, to isolated cases of the disease.

The preventive treatment of swine erysipelas, as practiced also in European countries, consists in protective inoculation with immune

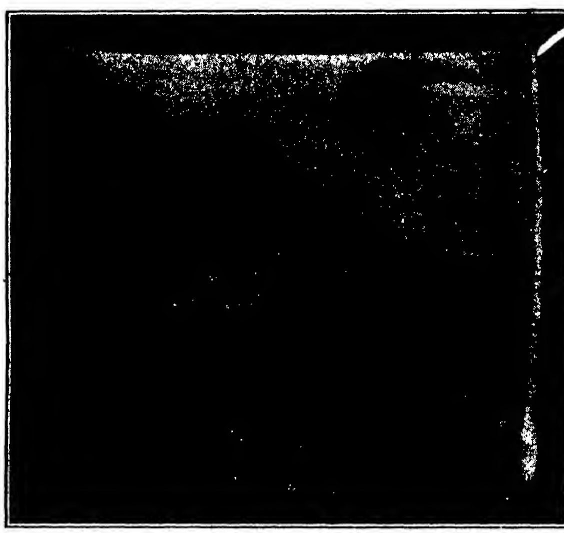

FIG. 224.—Specimen of hog skin showing typical appearance of chronic swine erysipelas

serum and virus of the disease, being analogous to the double method of treatment used in the prevention of hog cholera.

GILBERT T. CREECH.

TANNIN Content of Chestnut Stumps and Roots The wood of the American chestnut tree is at present our most important tanning material. At least one-half of our domestic supply of tannin comes from it. The trunks and branches, which contain from 6 to 10 per cent tannin, are cut for "extracting," a process in the preparation of commercial tanning extracts containing from 25 to 65 per cent tannin.

At present chestnut stumps and roots are not used for extract making. Recent experimental studies by the Bureau of Chemistry have shown that both the bark and wood of these parts of the trees are relatively rich in tannin. Root bark, although but a small part

of the entire root, contains the most tannin, reaching in one case the very high figure of 37 per cent, and ranging between this and 25 per cent. Root wood was also found to be rich in tannin, although it showed more variation in this respect than root bark. The results for root wood ranged from 9 to 23 per cent tannin. From an analysis of a number of stumps the average tannin content of different parts of chestnut stumps was found to be as follows: Bark up to 5 feet, 12.7 per cent; heartwood, center, 9.3 per cent; heartwood, edge, 16.4 per cent; root wood, 17.4 per cent; root bark, 31.4 per cent.

On the basis of an average for present-day "extract" wood of from 7.5 to 8.5 per cent tannin, the results obtained on stumps and roots would indicate a yield from them approximately twice as great as that from the commercial run of wood. These data consequently suggest the possibility of utilizing chestnut stumps and roots as a commercial raw material for tanning extract.

Because of the rapid development under normal conditions of excellent second growth from chestnut stumps it might be considered unwise to advocate the removal of these stumps. This argument, however, is overcome by the prediction of our best authorities that within the next 15 to 20 years the chestnut blight will have killed or diseased all American chestnut trees in this country east of the Mississippi River.

Among the samples included in this study were some from old stumps and roots that had been severely weathered for a number of years. It was found that even after such weathering the tannin content was relatively high. In later years, therefore, after the supply of sound, living chestnut has been seriously depleted the stumps and roots may be worth salvaging as a commercial source of extract so far as their tannin content is concerned.

R. W. Frey.

TAXATION of Farm Property Burdensome

The added costs of governmental service have laid increasing tax burdens on the farmers. State and local units in the country as a whole obtain 80 per cent of their total revenue from the proceeds of the general property tax. The farmer's property is of a sort that is readily discoverable by the assessor and that bears a heavier proportional share of the general property tax than do many other classes of property. In some sections of the country an almost intolerable tax burden rests on the farmer. Figures recently compiled for a number of rented farms in several Michigan counties show that for the last seven years taxes have taken about 90 per cent of what otherwise would have been the net return to the owners of these farms. It is believed that this is an exceptionally bad condition, but other studies in various sections indicate that in recent years a tax burden which takes from one-third to two-thirds of the return is by no means unusual.

Large reductions in the aggregate amounts expended by the State and local governmental units can not be expected in the immediate future. The major items of expenditure, the costs of roads and schools, will tend to increase rather than to decrease in amount.

When the public demands that the Government perform new functions or render new services, or when it demands that the old functions or services be expanded, it must be prepared to pay for them. Such an increase in governmental expenses will be dangerous if it brings with it needless extravagance and waste. Effective methods of controlling the expenditures of local units become more necessary when the amounts handled by such units are large. If, however, the Government performs the necessary services efficiently and economically, there is no reason for condemning the increased expenditures.

Means of Relief

In view of the facts that the total expenditures of the local and State governments can not be materially reduced in the near future, and that the tax burden on farm land in many sections is oppressively great, it may be asked whether any means of relieving the tax troubles of the farmer exist. The possibilities that come from budgetary control and elimination of waste have been mentioned. There are two other possibilities that present some opportunity for the reduction of farm taxes. The cost of maintenance of schools and roads when paid mainly from local funds weighs heavily on sections of a State where the level of wealth is low. The benefits of schools and roads can be assigned to a wider area than that of the local community, and the growing tendency to pay their costs by contributions from larger areas will relieve the poorer sections.

This does not, however, necessarily relieve agriculture as a whole from its burdens. Such relief must come from the opening up of new sources of taxation. The wide extension of the gasoline tax in recent years and the general spread of State income taxes are examples of such sources. In those States where there is a large volume of nonagricultural wealth, the income tax or any other measure which obtains a contribution from intangible property will tend to lessen the burden on agriculture. Where nonagricultural wealth does not exist in large volume, a readjustment of assessments on an equitable basis may frequently relieve those sections or individuals on which the tax burden has been especially heavy and will obtain added tax contributions from property that has paid little in the past.

The recent changes in the Federal income tax have largely eliminated the farmers' direct contribution to the Federal Government. It is true that there are important indirect contributions made by farmers to pay Federal expenses, but such payments are difficult to measure and bulk much smaller than do the farmers' payments to State and local units.

WHITNEY COOMBS.

TENANCY Changes From 1920 to 1925 Not Excessive

The period 1920–1925 was one of adjustment in agriculture along many lines, and changes in tenancy and ownership were to be expected. Rising prices of farm products coupled with easy credit encouraged the purchase of farms with small down payments while the ensuing slump caused a

change in ownership. Owners and tenants alike suffered from low prices and high costs but the tenants could, as a rule, move more quickly than owners. In many cases the owner-operated farm of 1920 was a tenant-operated farm in 1925. Local influences such as crop failure, low prices for some particular crop, the shifting of areas of production of a given crop all played important parts in the adjustment. There is no means of knowing at present whether these changes represented definite trends or whether they were merely the temporary results of disturbed conditions.

Accompanying this article are maps, the data for which were compiled on a county basis, showing changes that occurred in the tenure of land in different regions of the United States during the period 1920–1925. Because of the counterbalancing effect of regional changes, the net change in tenancy was rather small for the country as a whole. There were only 7,724 more tenant-operated farms in

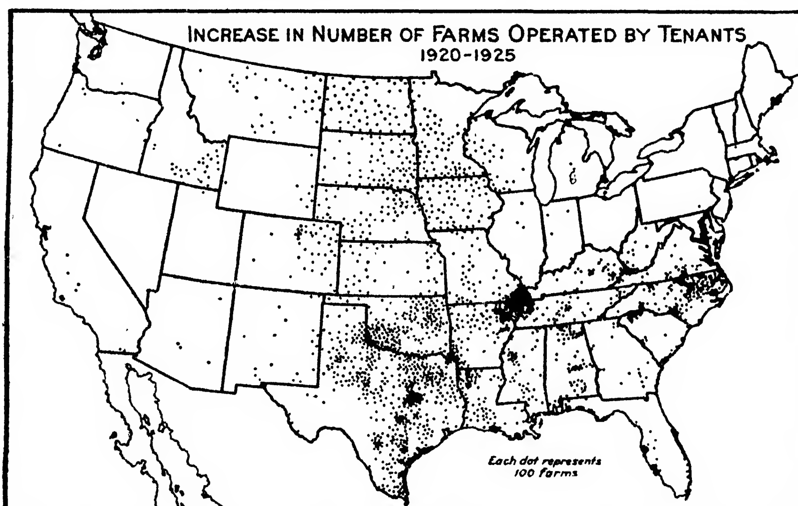

FIG. 225.—Increases in number of tenant-operated farms were local east of the Mississippi River and very general between that river and the Rocky Mountains

1925 than there were in 1920, but during this period owner-operated farms declined 56,756. The net effect was that there was an increase of one-half of 1 per cent of all farms operated by tenants. This rate of increase in percentage of tenancy is almost the same as that for the period 1910 to 1920. Tenant-operated farms formed 38.1 per cent of all farms in 1920, while 38.6 per cent were so reported in 1925.

A comparison of Figures 225 and 226 brings out two important observations: (1) The number of tenants has declined in most of the counties east of the Mississippi River. (2) The number of tenants has increased in most of the counties west of the Mississippi River excepting those counties west of the Rocky Mountains.

Northeastern United States

The decline in the numbers of tenants in the area east of the Mississippi and north of the Ohio and Potomac Rivers was accom-

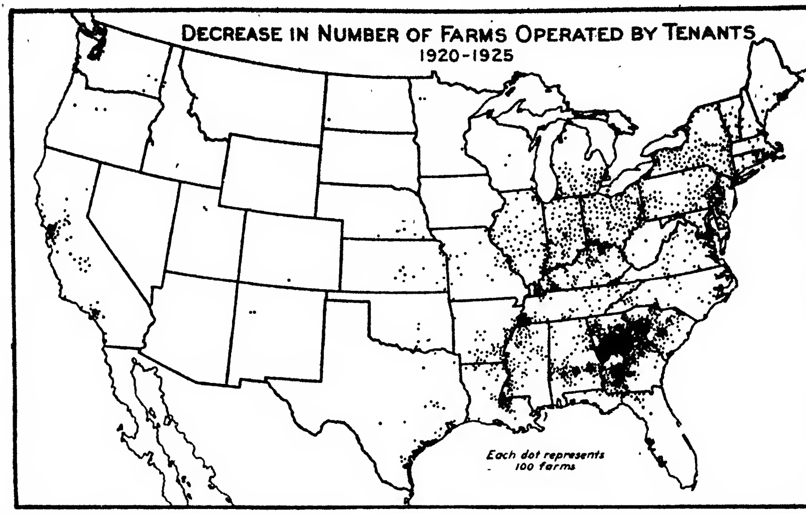

FIG. 226.—Most decreases in number of tenant-operated farms are found east of the Mississippi River

panied by an increase in the number of owner farms in most counties, though some counties showed losses of owner-operated farms. These latter were mainly in Ohio, Indiana, Illinois, Michigan, and Wisconsin. The increases in owner-operated farms were principally in those regions where agriculture is not the most important industry. (Figs. 227 and 228.) In the northeastern United States the increase in the number of owner-operated farms is apparently explained by the fact that many people who are employed in cities and towns live in the country, and farm as a side line. The percentage of tenant-operated farms has decreased in almost all counties in this part of the country.

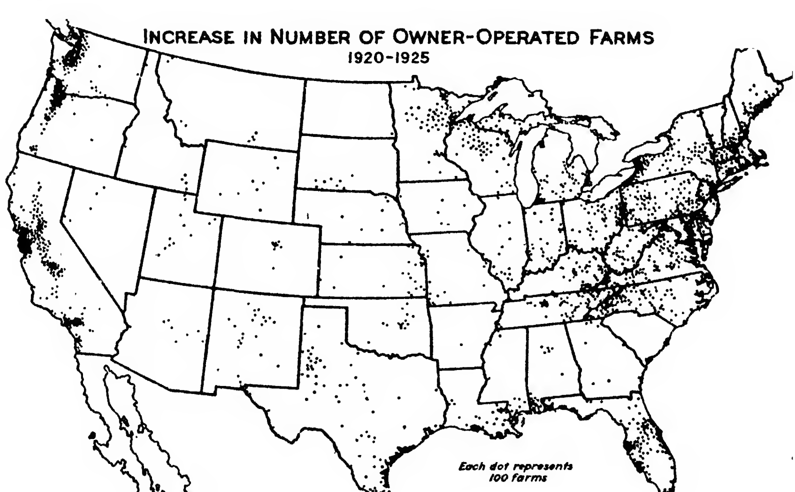

FIG. 227.—Few increases in number of owner-operated farms occur in the general farming section

Local influences were dominant in the tenancy situation in this area. There was a great decline in number of tenants in Georgia and South Carolina. Bad years for cotton and the exodus of negroes account for it. (Fig. 226.) Increases in the number of tenants from 1920 to 1925 were local. (Fig. 225.) Cotton acreage was increased in western Kentucky and Tennessee and in adjacent areas of Illinois, Missouri, and Arkansas. Here occurred the greatest increase in numbers of tenants in the whole country. Most of the other areas showing considerable increases in numbers of tenants have recently introduced cotton or tobacco.

Decrease in Owners

Decreases in the number of owners were very general in Mississippi, Alabama, Georgia, and South Carolina. Farming has not been

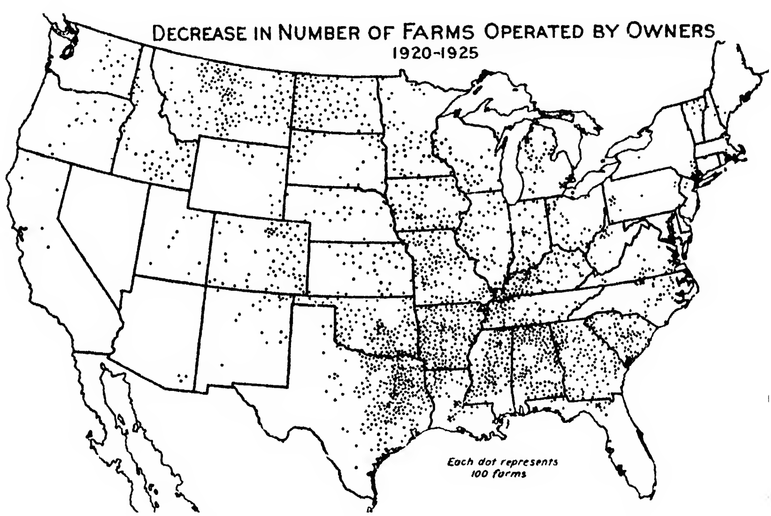

FIG. 228.—Decreases in number of owner-operated farms were quite general in the South and Middle West

very profitable in this area. Owners who had paid too much for land and others who thought that they could make more in other occupations departed. Under adverse conditions tenants may leave localities in a wholesale way while owners move less readily. The abandonment of farms by owners covers a much wider area. Increases in numbers of owner-operated farms took place mainly in the mountain regions and in Florida. Both of these increases were associated with home ownership rather than business farming.

Western United States

Tenants decreased in numbers along the Mississippi River and in California. (Fig. 226.) The smaller number of tenant farmers along the lower Mississippi River is explained mainly by the failure of cotton in that region, while in California there has been some loss of Japanese tenants.

Increases in the number of tenant-operated farms in many parts of Texas, Oklahoma, Arkansas, Louisiana, and Missouri were the result of increased acreage of cotton in these same areas.

The larger number of tenants in the corn and wheat belts was due principally to a retrogression from ownership. Many owners became tenants and other owners, on leaving the farm, leased their land to tenants on any terms obtainable. Figures 225 to 228 when compared show that many of the areas with an increase in number of tenants had a decrease in number of farm owners. A pronounced increase in the number of owner-operated farms took place in the Pacific Coast States. These were mainly small farms.

Changes in Percentage of Tenants

These changes are an expression of the effect of all changes in the numbers of tenants and owners in each county. There is apparently no general relationship between the increase or decrease in the percentage of tenancy and the prosperity of agriculture.

Decreases in the percentage of tenancy from 1920 to 1925 were most conspicuous in the Northeastern and Pacific Coast States. In many of the counties in the Northeastern States, a decreased percentage of tenant-operated farms resulted from a decline in the number of tenant-operated farms accompanied by an increase in the number of owner-operated farms. These owner-operated farms were in many cases small places used mainly as homes.

In the East North Central States tenant farms declined in numbers more rapidly than owner farms thus decreasing the percentage of tenant-operated farms. This statement applies also to most counties in the Southeastern States where a decreased percentage of tenant farms is shown.

In the Pacific Coast States the decreased percentage of tenant-operated farms was mainly due to a large increase in the number of owner-operated farms, mostly of small size. Increased percentage of tenancy is most conspicuous west of the Mississippi. In much of this region owner farms decreased in numbers and tenant farms increased. The percentage of tenants, of course, increased.

O. M. Johnson.

TENANT Farmers in the U. S. In 1925 our farm tenants were 38.6 per cent of the total number of farm operators. The percentage of tenancy in the different States and counties shows a wide variation. In some counties less than 5 per cent of the farmers are tenants. In other counties over 95 per cent are tenants. Only 3 per cent of the farmers of Maine were tenants in 1925 as contrasted with 68 per cent in Mississippi.

Farm tenants, for the most part, are young men. Tenants farming in 1920 averaged 39 years of age with 11 years' experience as tenants. Of farmers under 25 years of age, over three-fourths were tenants, but of farmers of 65 years and over only a sixth were tenants.

The large proportion of young men who are tenants is largely a result of the fact that they are using tenancy as a step in climbing the ladder to farm ownership. When beginning to farm, many start as farm laborers. Nearly half the tenants farming in 1920 had worked on farms for wages and among those who had never worked on farms for wages, there were many who had worked on farms for their parents. The experience, reputation, and capital gained while working for others gives the farm laborer the confidence, recognition, and means necessary to become a tenant.

In some parts of the country it is possible to become a farm tenant before one has money enough to own the animals and tools with which to work if one is able and willing to work as a cropper. Most farm tenants, however, own their work animals and tools from the time they start as tenants. When their accumulations are sufficient, tenants are likely to become interested in the acquisition of farm land.

Some Owners Become Tenants

Equal progress on the tenure ladder is not made by all farmers and where there is progress there is the chance of a reversal. About a ninth of our farm tenants once farmed places of their own. Perhaps most of this ninth who no longer farmed their own land had stepped down on the tenure ladder, disposing of their equity in the land for what it would bring when they left it, but others were renting it to tenants in turn, and some others deliberately let their own land lie idle, finding it more profitable or convenient to rent land from other owners than to get a living from such small, infertile, unimproved, or inaccessible parcels as they themselves owned.

Because little capital is needed many start as farm tenants who remain farmers but a short time and most of those who continue as tenants have no property interest that can not be easily moved. Every year changes of tenants occur on an enormous number of farms, so that usually a third of the tenants are making their first crop on the farm they occupy. Before an owner farmer can move he is likely to find it necessary to obtain a customer for his farm, but no such difficulty prevents a tenant from changing farms frequently. The number of years farmers have operated the farms they are on will average, at any given time, about 12 for farmers who own and 3 for tenants.

Replies of the landlords of nearly 57,000 tenants widely distributed throughout the country indicate that about 23 per cent of the tenants were related to their landlords, the percentage being about 36 in the North Central, 24 in the Great Plains, and 12 in the Southern States. The proportion of tenants related to their landlords is about a third in Iowa, two-fifths in Wisconsin, but only a fifth in North Dakota, and a ninth in California.

The percentage of tenant farmers who are women was 3 in 1920, varying in the different States from 0.5 in Indiana and in Iowa to 7.4 in Mississippi.

Racial Groups of Tenants

In 1920 about two-thirds (66.4 per cent) of the tenant farmers were native whites, 4.5 per cent foreign-born whites, 28.7 per cent negroes, and the other 0.4 per cent Indian, Japanese, or Chinese, as

contrasted with owners, of whom 82.2 per cent were native whites, 11.8 per cent foreign-born whites, 5.5 per cent negroes, and 0.4 per cent colored farmers other than negroes. The great majority, 98.5 per cent in 1920, of colored tenants farm in the 16 Southern States.

In 1920, 561,091 of the tenant farmers of the South were croppers, so classified because they depended on the person from whom they rented to furnish the work animals as well as the land. In most cases such dependency is associated with further dependency on the landlord for feed, for supervision, work animals, implements, seed, and fertilizer used. For growing and harvesting the crop the cropper gets a share which is commonly pledged to obtain loans for necessities of life while the crop is being made. Of the entire number of croppers three-fifths were colored farmers in 1920.

In the South nearly half, 47.4 per cent, of the colored tenants farmed as croppers in 1920, whereas only a quarter, 25.6 per cent, of the white tenants of the South farmed as croppers. If one were to consider the croppers of the South in 1920 as laborers, and there is considerable justification for doing so, it would appear that 22.9 per cent of tenants of the country, or 35.3 per cent of the tenants of the South, were laborers working for a share of the crop, but with little to say as to the operation of the farm. In Mississippi and in Georgia nearly half, and in Arkansas two-fifths, of the tenants were croppers in 1920.

Who Our Farm Landlords Are

The average farm landlord has less than two tenant farms of about a hundred acres per farm. Approximately four-fifths of the owners of rented farms own but one rented farm and over nine-tenths own but one or two rented farms.

The fact that about seven-eighths of the landlords with five or more tenants live in the South is closely connected with the difference between the North and the South in size and value of tenant farms and in the enterprise of the northern tenant as compared with the dependence of the southern tenant.

In sections of the South where negro tenants occupy most of the farms their dependency is such that the land is operated usually in large plantation units. On representative plantations a score or more of negro tenants may be employed under supervision, each being allotted a definite part of the plantation to work. The plantation system is not to be found in the North, and in the South it is prevalent only in certain regions, chiefly those where slave plantations prevailed before the Civil War. But in many parts of the South where there are no plantations a dependent cropper class exists which is commonly employed by owner farmers to work on shares land which the farmer can not tend with his own hired and family labor.

In the South farm landlordism is largely a phase of farm or plantation operation. In Northern States farm landlordism is commonly a phase of retirement from farms. Of a group of southern landlords over half reported themselves as farming as compared with a fifth of a group of northern landlords.

Owners of rented farms in the South evidently do not retain their land as long after they have reached the age of retirement from

farming as is the case with northern landlords. The average age reported by representative southern landlords who had farmed and retired was 53.6 years which is the average actual age of all reporting southern landlords including those not retired. Northern landlords also retired at an age averaging 53.6 years, but northern farm landlords averaged 59.5 years in age.

Most Owners Have Bought Their Land

In order to acquire farm land most of the present landlords have had to buy it. Of land owned by a representative group of 24,000 farm landlords over four-fifths had been purchased and only about a sixth obtained by gift or inheritance.

Less than a sixth of the reporting landlords were women and of the men who gave their farming experience almost half had farmed as tenants and three-fourths as owner farmers. Most persons who own rented farms have worked on farms. Few, even among those who inherit farm land, get it without having worked on farms.

If there has been any change in the amount and degree of absenteeism since 1900 the change has resulted in a decrease. In 1900, 21.2 per cent of the rented farms were owned by landlords resident out of the county. In 1920 only 19.6 per cent of a quarter of a million representative tenant farms were owned by landlords resident out of the county. The automobile, better roads, and rural free delivery of mail have increased the convenience with which distant residents can keep in touch with their tenants.

Over nine-tenths of the rented farms are owned by landlords who live in the county or in adjoining counties. Only about 5 per cent are owned by landlords resident out of the State and the number owned by persons resident out of the county is insignificant by comparison with the total number of tenant farms in the country.

In general less absenteeism is shown in connection with the ownership of rented farms in the East than in the West and less in the South than in the North. The proportion of tenant farms owned by landlords resident out of the county is about a third in California, two-fifths in North Dakota, a third to a fourth in Iowa, a fourth in Illinois, a fifth in Ohio, Delaware, and Alabama, a fourth in Maryland, and a sixth or seventh in Kentucky and some other Southern States.

H. A. Turner.

TERMITES Cause Modifications in Building Codes Throughout most of the United States native termites, or white ants, cause serious damage to the foundations and woodwork of buildings and articles in the buildings. Such damage is especially serious in the Southern, Central, and Pacific Coast States and the tropical possessions of the United States. Termites damage buildings in both cities and rural regions, but the small householder usually suffers the greatest loss.

Improper construction of buildings is responsible for most termite damage, and it is a great hardship for a man of moderate means who is buying a house on time to be forced to expend several hundred dollars, a few years after making the initial payment, to repair damage done by termites

The woodwork of buildings can be protected from the attack of termites by proper construction and by the use of wood treated with preservatives. Where already established in buildings, these insects can be eliminated only by removing wood in contact with the ground and replacing it with wood chemically treated; fumigation, in-

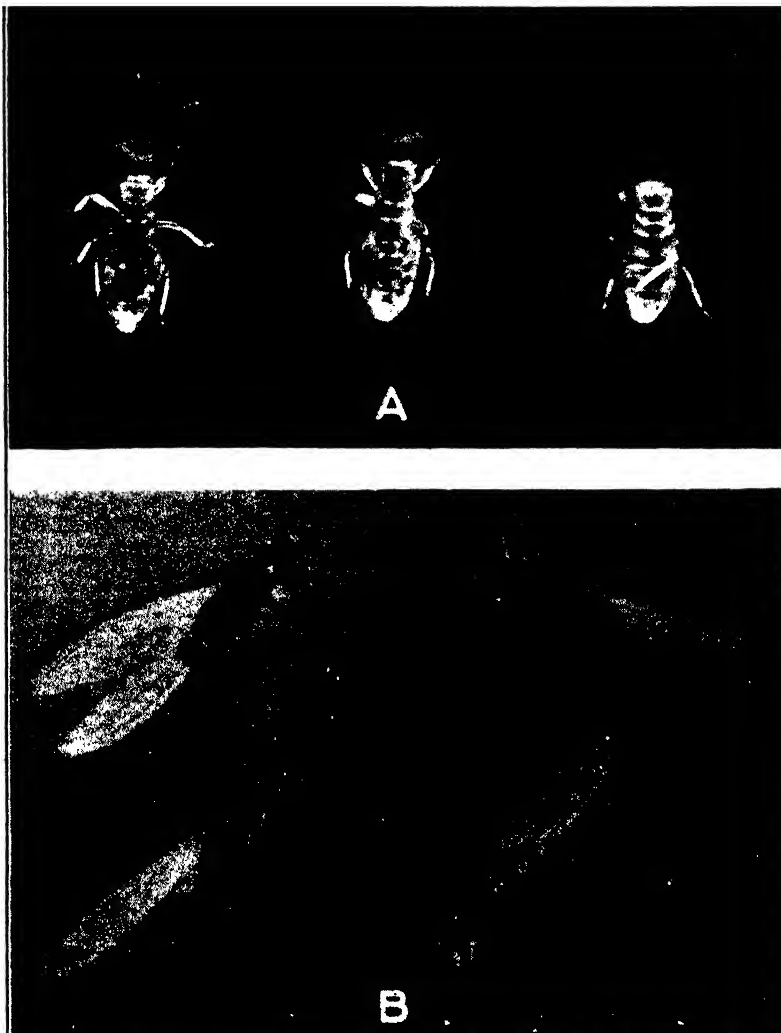

FIG. 229.—A, Worker termites of the common species that live in the ground: these remain hidden within the wood and are the destructive forms. B, The winged forms that usually appear in infested buildings in the spring are the sexual forms and should serve as a warning to the householder that damage is being done

secticides, or poisons are futile in permanently protecting buildings from our common termites which live in the ground.

To construct buildings so that they will be white-ant proof, make their foundations, where possible, entirely of stone, brick, or concrete, including stone or metal columns or pillars in the basement to sup-

port the floor above; make concrete walls and flooring in basement or cellar, and lay concrete floors on a gravel base. Where stone or concrete foundations are impracticable, use timber impregnated with coal-tar creosote.

In purchasing a house, insulation of all untreated woodwork from the ground should be insisted on. This is a form of home insurance and will pay in the end.

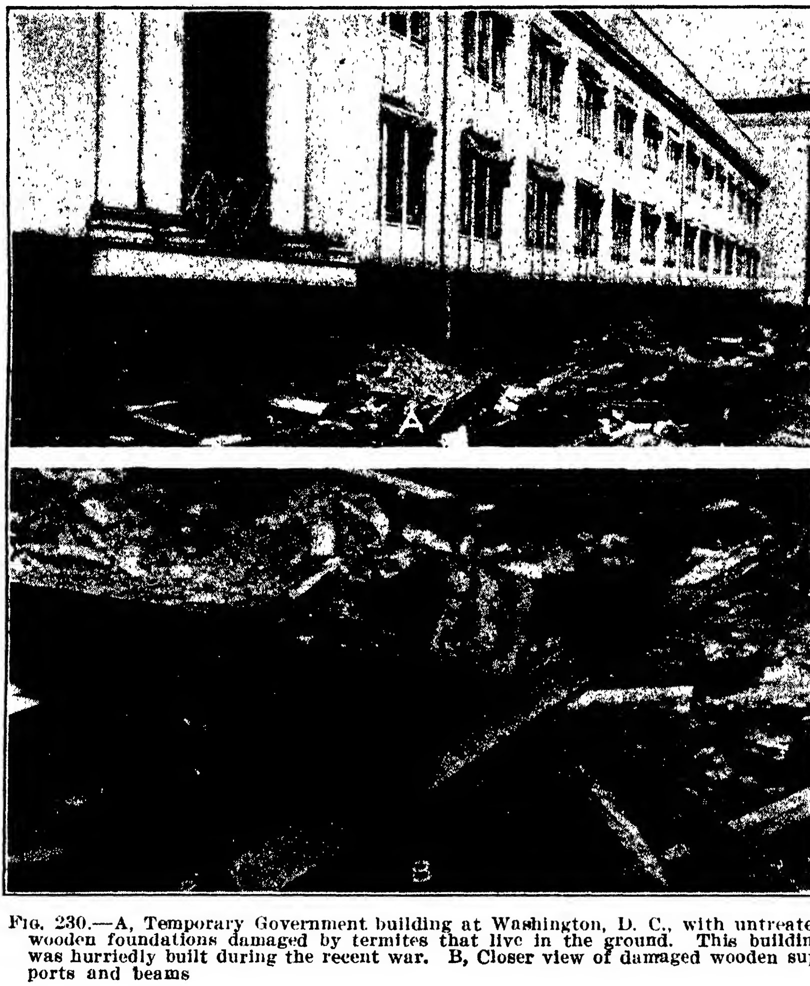

FIG. 230.—A, Temporary Government building at Washington, D. C., with untreated wooden foundations damaged by termites that live in the ground. This building was hurriedly built during the recent war. B, Closer view of damaged wooden supports and beams

One of the simplest and most effective means of preventing termite damage, is modification of city building regulations or codes so as to include a few simple rules for protection. In rural regions where there are no city engineers, county agents or community organizations could be utilized to protect the home builder.

Since the principal object is to keep all untreated wood from contact with the ground, in which the termites live and from which they get their moisture, the regulations should stipulate that no floors, sills, frames, beams, clapboard, or other parts of untreated

wood may be laid on or in the earth, and that untreated beams may not be laid in concrete without at least 1 inch of concrete underneath and separating it from the earth. If damp proofing is desired, tar and tar paper between untreated wood and the earth are not effective in preventing attack and should be used only over a layer of concrete. Where mortar is used in foundations or in cellar walls where they are in contact with the earth it should be composed of 1 part Portland cement to 3 parts of sand graded from fine to coarse, with no grains larger than will pass through a No. 10 sieve, to which may be added 10 per cent by weight of the cement of some workable agent, such as hydrated lime. In preparing such mortar precaution should be taken that the lime is carefully slaked and screened. After cooling it should be thoroughly mixed with measured quantities of clean building sand free from organic impurities. All mortar joints, the central one in particular, should be thoroughly filled. Or, for greater precaution, all brickwork extending below the surface of the ground should be faced and capped with concrete at least 1 inch thick.

Where termites that attack wood directly and not from the ground occur, as well as subterranean termites, it is suggested that only woodwork impregnated with preservatives be used for exterior and interior construction, unless it is impracticable to obtain such treated wood.

Impregnation with coal-tar creosote is the most effective treatment for foundation timbers to be set in contact with the ground; for interior woodwork not in contact with the ground impregnation with zinc chloride is recommended.

THOS. E. SNYDER.

TICK Eradication Succeeding in Southern States The history of the cattle industry of the South indicates that from the earliest plantation days the cattle disease, now commonly known as Texas or tick fever, has been the most serious obstacle confronting the southern cattle raiser.

For the last 20 years the Bureau of Animal Industry of the Department of Agriculture in cooperation with cattle owners and State and county officials has been waging a war of extermination on the cattle tick. The eradication of this tick means the eradication of Texas fever, as it is only through this particular parasite that this infectious blood disease of cattle is transmitted.

In 1906, when systematic, cooperative tick eradication was undertaken, 984 counties in 15 Southern States were below the Federal quarantine line that stretched across the country from a point on the Atlantic, near Norfolk, Va., to the Pacific coast, a little south of San Francisco, Calif. This quarantine line in a general way divided the tick-infested from the tick-free area, and all cattle in the vast territory south of this line were affected by the tick embargo.

Shipments from the quarantined area were restricted to a few of the large northern markets, where the receipt for immediate slaughter of these so-called "southern cattle" was authorized by an act of Congress passed in 1884. A recent act of Congress, approved June 28, 1926, repeals this special provision and requires that until

FIG. 231.—Chute inspection to determine freedom from the fever tick

May 1, 1928, cattle infested with or exposed to ticks may be shipped in interstate commerce for immediate slaughter after one dipping. After that date only tick-free cattle may be moved interstate for any purpose.

FIG. 232.—Cattle emerging from the tick-destroying arsenical bath

When first proposed the feasibility of evolving a practical procedure that would result in the complete eradication of the cattle tick from any considerable area was seriously doubted by many. Fortunately, however, there were others who had faith in the project or were at least willing to give it a fair trial, and later developments have amply justified the confidence of these pioneers.

As a result of the cooperative efforts 723 of the 984 counties originally quarantined, have been released from the tick-quarantine restrictions, and good headway is being made in cleaning up the remaining ticky territory. The movement of cattle from the quarantined area is no longer restricted to shipments for immediate slaughter. **Cattle**

are now freed from ticks by dipping in an arsenical bath (fig. 232) and their shipment permitted for any purpose to any destination.

The extensive and varied sections of the country in which tick eradication has been conducted naturally presented problems that changed with local conditions. One of these which for a time was very troublesome was the "open range." In many sections of the South there are still large, unfenced range areas upon which cattle and other livestock range at will. When the work of tick eradication would reach these sections considerable difficulty was experienced in collecting all the cattle for dipping, and in ascertaining when all the cattle on a range were treated at the intervals required in systematic tick eradication.

It was soon apparent that to be successful under these conditions a system of checking that could be relied upon to identify the dipped

FIG. 233.—The paint-mark check. Note spots on hip and shoulder for identifying cattle that have been dipped

from the undipped cattle was necessary. This difficulty was met by the simple expedient of placing a small paint mark upon each animal (fig. 233) as it went through the dipping vat. Riders then made a check inspection of the animals on the range, and those that have missed treatment are readily identified by the absence of the paint mark. Animals found without this paint mark are taken up and dipped.

In such ways the methods followed in the war on this pest have been improved upon from time to time as experience and investigation brought out new facts, until it may be stated that these methods have reached a degree of perfection and have had such wide use under varied conditions that the question of how to eradicate ticks is no longer the difficult part of the problem. The most important feature now is to obtain the thorough and conscientious cooperation of the cattle owners and local officials in order that the work may be completed without unnecessary delay.

W. M. MACKELLAR.

TIMBER'S Harvest Time Depends on Soil Conditions When is the best time to harvest the timber crop on the farm wood lot or forest area? Obviously, when the trees have reached the point of best development, according to the use to which the wood is to be put. It pays to wait many more years for saw timber than for pulp wood or fence posts. But when saw timber has reached a reasonable size and the rate of growth slackens, it is better to market the lumber and start a new fast-growing timber crop than to wait for larger growth.

The Forest Service through its forest experiment stations in every important timber region is striving to obtain figures on the rate of growth of every marketable forest tree. This work has only begun, but already approximate figures are ready for some tree species, and these are summarized for pulp wood and saw timber in Table 28. Fence posts and similar material can often be taken out each year as thinnings of the saw timber crop. Where fence posts are the main crop, the age for harvesting is about the same as for pulp wood.

TABLE 28.—*Age for cutting and approximate yield per acre of different forest trees on good, medium, and poor soil*

Region and species	Good soil				Medium soil				Poor soil			
	Pulp wood		Saw timber		Pulp wood		Saw timber		Pulp wood		Saw timber	
	Age	Yield	Age	Yield	Age	Yield	Age	Yield	Age	Yield	Age	Yield
Northern New England:	*Yrs.*	*Cds.*	*Yrs.*	*MBM*[1]	*Yrs.*	*Cds.*	*Yrs.*	*MBM*[1]	*Yrs.*	*Cds.*	*Yrs.*	*MBM*[1]
Balsam fir	45	39	70	29	55	41	85	22	65	35	----	----
Red spruce	50	39	70	32	55	38	85	26	65	34	115	13
White spruce	45	35	65	29	50	30	85	23	60	33	----	----
Appalachian Mountains:												
Yellow poplar	15	11	25	10	20	13	30	9	25	10	40	7
Southeastern States:												
Loblolly pine	15	22	25	18	20	21	30	17	25	19	35	12
Long-leaf pine	20	24	30	16	25	16	50	17	35	11	80	11
Short-leaf pine	20	24	30	19	25	25	45	23	30	19	65	17
Slash pine	15	18	25	17	20	25	35	17	25	29	60	16
Southern white cedar	----	----	60	24	----	----	70	16	----	----	80	7
Lake States: Jack pine	30	26	50	16	30	17	70	15	40	16	80	8
Louisiana: Tupelo gum	----	----	----	----	20	13	40	17	----	----	----	----
Pacific Northwest: Douglas fir	20	21	25	15	20	18	35	25	25	26	45	29
Northeastern California:												
Western yellow pine	----	----	80	17	----	----	90	17	----	----	100	14

[1] MBM=Thousand feet board measure.

DONALD BRUCE.

TIMBER Measuring on the Farm Not a Difficult Task The farmer should know how much timber he has, as well as how much corn, oats, tobacco, or cotton. With a little care and practice he can learn to estimate his standing timber as closely as any of his crops.

The log-scale stick tells how many board feet of lumber can be cut out of logs of various sizes and lengths. The Doyle rule, although in common use, does not tell this at all accurately for logs smaller in diameter than about 28 inches, and is still less accurate for logs smaller than 12 or 16 inches. For example, by the Doyle rule a 10-

inch log 16 feet long scales 36 feet, whereas by the prevailing close sawing it will yield about 64 feet.

Clearly the Doyle rule favors the buyer rather than the seller. The Doyle-Scribner rule is low for large logs as well as for small logs. A good rule that is gradually coming into general use, the International log rule, comes very close to giving the amount of lumber that can actually be sawed out by using good methods. It is recommended that so far as possible logs be measured and sold by this rule or by actual mill tally of the lumber cut from them.

TABLE 29.—*Portion of International log rule showing lumber contents of logs in board feet (saw cutting ¼-inch kerf)*

Diameter in inches at small end of log	Length of log in feet						
		10				18	20
	Contents in board feet						
6	7	10	13	15	19	23	27
7	12	15	19	24	28	33	39
8	16	21	27	33	39	45	52
9	23	29	36	43	51	59	68
10	29	37	45	54	64	75	86
11	36	46	57	68	80	92	105
12	44	57	70	83	97	111	127
13	52	68	83	100	116	133	151
14	62	80	98	117	136	156	176
15	73	94	114	136	157	180	204
16	84	108	131	156	181	207	233
17	96	123	149	177	205	235	265
18	110	139	169	201	232	265	299
19	123	156	190	225	261	297	335
20	138	174	212	251	290	330	372
21	152	193	234	279	321	366	412
22	108	214	259	307	354	404	453
23	186	235	285	337	388	442	497
24	203	257	311	367	424	481	542

To use a log scale, measure the diameter of the log inside the bark at the small end. Measure the length of the log in feet. Read the scale shown on the table or stick for the corresponding diameter and length. The scale is for straight and sound logs; if any defects appear, such as rot, shake, and crook, appropriate deductions should be made.

Scale Table Method

Logs can be scaled by using an ordinary rule or yardstick and a scale table which shows the contents of logs of different lengths and diameters. The State or Federal forestry services supply such scale tables upon request.

To determine the merchantable contents of a standing tree, estimate the number of logs in the tree and the size of each log. To do this measure the diameter of the tree outside the bark at breast height (4½ feet above the ground), and also the height to the top end of the smallest log. The taper of the trunk is often about 2 inches to the 16-foot cut. Near the top it may be more. By getting the content of each log with a log rule it is then easy to estimate the total lumber content of the tree. Again, one should judge as closely as possible the necessary deduction for defects.

Tree scales have been prepared and are coming into common use. They show the contents in lumber or cords of trees of different kinds and sizes. Different kinds of trees require the use of different scales. Here again it is necessary to measure the breast-high diameter and the total merchantable height. The pines, spruces, and other conifers are easy to scale accurately. Although the hardwoods, because they are less regular in the shape of their trunks, can not be estimated so accurately, tree scales for some of the more common kinds, such as red and white oaks, ash, yellow poplar, and sweet gum are available and are being used.

Log and tree scales may be purchased from dealers, and from some of the Federal land banks. Instruments for measuring tree diameters (calipers) and heights (hypsometers) are sold by the same agencies or may be made at home. Information on the subject is always gladly furnished by the State foresters, agricultural extension foresters, or the Federal Forest Service.

It is comparatively easy to obtain a fair idea of the contents in board feet of a piece of standing timber. All the trees may be estimated or a number of small areas fairly representing the stand may be selected and measured. The latter method, or partial estimate, is commonly used except for very small wood lots.

Representative Areas Desirable

One method is to select a number of quarter-acre plots in the best, the average, and the poorest portions of the stand. A circle with a radius of 59 feet makes one-fourth of an acre. A center tree should be selected and the distance of 59 feet measured or stepped out in four or more directions and the points marked. All the trees within the circle are measured and their contents recorded. The selection of the areas should be made with care and good judgment so as to have them truly representative.

Another method in common use is to tally every tree within a strip 2 rods (33 feet) or 4 rods (66 feet) wide. A strip 4 rods wide and 40 rods long contains 1 acre. If such strips are laid out at regular intervals, it is easy to determine what percentage of the whole stand the estimate covers. An estimate of 20 to 40 per cent of the total area is often necessary or advisable.

Wilbur R. Mattoon.

TIMBER Selling From the Farm to Consumers

The owner of timber may prefer to sell it on the stump or he may prefer to cut it himself and sell the product. If he chooses to sell the timber standing, he may do it in any one of four ways; by the lump, by log scale, by sawed-lumber scale, or by the piece or stack.

In selling the timber on a tract for a lump sum the owner is likely to be at a disadvantage unless he gets a preliminary estimate of the contents and value of the timber. If he is unable to make such an estimate himself it will in most cases pay him well to employ outside help for this purpose.

A millman in Stark County, Ohio, several years ago bought a small block of standing wood-lot timber at the owner's lump price

of $350. From it he cut 34,000 board feet of lumber, which he marketed in a town 6 miles distant at an average price of $36.83 per thousand, or a total of $1,252. Cost of logging, sawing, and delivering was $12 per thousand, or $408 for the lot. Allowing a profit of 25 per cent on the total money invested, or $189.50, the total cost of getting the material from the stump to market was $597.50. The difference between this and the market value of the lumber gives the true stumpage value, or $654.50, instead of $350 which was the amount paid. Thus the farmer practically gave the buyer $304.50. The cost of a timber estimate would not have exceeded $25.

Selling standing timber by the lump is a good method if the land is to be cleared for uses other than timber growing because the buyer usually cuts very clean. This method also has the advantage that it avoids differences in opinion between buyer and seller such as may arise over the scaling and grading of individual logs if the timber is sold by log scale. On the other hand, the method is inadvisable if the owner desires to foster young growth and provide for a future timber crop.

Determining Sale Value in Advance

In selling by log scale, that is, at a fixed price per thousand board feet measured in the log as it is cut, the chief concern of the owner is to determine in advance the sale value per thousand feet of the timber in the tree. This may be obtained as an average log-run price for all the trees on the land, or separately for each species and for each grade of logs. Unless the timber runs nearly uniform in kind and quality the latter way is the better for an owner with experience in grading. The owner may either offer his timber at a stated price or call for bids and sell to the highest bidder.

It is very important in selling by log scale to specify the scale to be used. The Doyle rule gives very low scales for small logs such as are obtained from most second-growth timber. The International log rule gives fairly closely the amount of lumber that may be cut from a log by careful sawing; and this rule is recommended. A 16-foot log 12 inches in diameter at the small end, when carefully sawed with a circular saw of ordinary thickness (¼-inch kerf) should cut out about 97 board feet of lumber, as is shown by the International rule. The same log scaled by the Doyle rule shows 64 board feet. Copies of the International rule can be obtained from State or Federal forest officers. It will pay the inexperienced seller to employ a competent person to check the scale. Selling by log scale should usually be chosen in preference to selling by the lump in cases in which the contents and value of the timber have not been carefully estimated in advance, and particularly if the timber is of high value.

Board-Foot Measurements

Board-foot measurement of the lumber actually sawed out is unquestionably a more accurate basis for selling timber than either of the two methods already mentioned. Mill scales as a rule show from 10 to 30 per cent more than log scales. This method, however, causes some delay and expense, but is coming into more general use as the value of forest products rises.

Fence posts, small mining timbers, ties, poles, piling, and some other products are sold by the piece of specified dimensions. Bolts of the shorter lengths are ranked and sold by the cord; the larger ones are measured as logs. Firewood is always sold by the cord or rick. The same precautions should be taken in such sales as in selling logs.

A profitable way of marketing farm timber is for the owner to cut and haul the products to market himself. This provides winter employment for hired help and teams. Also it enables the owner to obtain profits that would otherwise go to the purchaser of standing timber.

Selling Points

Sell direct to the consumer.

Get bids, if possible, for each piece of timber from several buyers.

Advertise in the papers and write personal letters to sawmills and manufacturing plants.

Consult neighbors who have lately sold timber.

Join with neighbors in making up cooperative carload shipments of logs, bolts, or other timber products.

WILBUR R. MATTOON.

TOBACCO Grades Adopted Under Warehouse Act

Authority is given under the United States warehouse act for the establishment of standard grades for tobacco. It is necessary that the type and grade of tobacco be stated on warehouse receipts and certificates issued under this act, unless otherwise requested by the depositor. Standard grades form a basis by which farmers may arrive at the market value and bankers at the collateral value of a commodity.

Standard grades are needed by farmers to serve as a guide in assorting and preparing tobacco for the market if they are to obtain the best price. They are needed to facilitate the purchase of uniform packages of tobacco. A definite classification of the various types and standard grades are needed as a basis for market reports and statistical information. By means of such classification and standard grades, farmers are able to keep posted on market prices and crop conditions. Without standard classification and grading, market reports and statistics of one lot of tobacco may mean one thing to one farmer or dealer and quite a different thing to another farmer or dealer. Standard grades facilitate all commercial transactions in tobacco by giving to the farmer, dealer, warehouseman, banker, and manufacturer definite information that means the same thing to all parties.

Plan of Type Classification and Standard Grades

In order to formulate a basis for establishing standard grades for tobacco, specific information and data from all the tobacco-producing sections were collected and analyzed. It was necessary to make a broad survey of all types of tobacco and classify their various qualities and characteristics. After extensive field studies and of research work in the laboratory, the department arrived

at a plan for classifying the various types of tobacco and establishing standard grades for each type.

Under this plan all American-grown tobacco is divided into six major classes, namely, flue-cured, fire-cured, air-cured, cigar filler, cigar binder, and cigar wrapper. In the southern tobaccos (the so-called chewing, smoking, snuff, and export types) this class division is made on the basis of the method of cure. In the cigar-leaf tobaccos the division is made on the basis of the principal usage. Each of these classes covers several related types. The classification combines over 300 frequently used indefinite type names into 29 types, each designated by a definite type number. Each type having an annual production of 1,000,000 pounds or more is classified separately and all types of smaller production are classified together as "miscellaneous types." These types are produced in 25 States, some States producing several distinct types.

Tobacco varies so widely with respect to quality, color, length, and other characteristics that it was necessary to work out a simple, uniform plan for standard grades that might be easily applied by the average tobacco grader, and readily interpreted by the buyers and manufacturers. The plan adopted by the department is characterized by its simplicity. The same plan applies to all types.

Factors in Tobacco Grading

Under this plan, a standard grade of tobacco is ordinarily composed of four factors—group, quality, color, and length. These are considered in the order named. To avoid lengthy descriptive terms, letters and numbers are used as symbols to designate each factor. The grade symbol is composed of a combination of these letters and numbers. This system makes for brevity. It also permits descriptive analysis to be made from the grade symbol. Detailed information as to the type classification and standard grades is now available.

In January, 1926, Miscellaneous Circular No. 55, "Type Classification of American Grown Tobacco," was published, and copies may be obtained either from the Department of Agriculture or from the Superintendent of Documents at Washington. This is a complete and systematic classification of all American leaf tobacco.

Tentative standard grades for 20 types of tobacco have been prepared by the department. These types cover approximately 97 per cent of the total American production. Grades have been prepared for all flue-cured, all fire-cured, four air-cured, four cigar filler, and four cigar binder types. Detailed grades for the types known as United States standard types Nos. 11, 12, 13, 14, 22, 23, 24, 31, 35, 36, 41, 54, and 55 are available in mimeograph form. In these mimeographed pamphlets the grading system is fully explained and a number of trade and technical tobacco terms are defined. The various elements entering into the quality factor are also fully presented.

Definite standards for expressing the length of tobacco have been established. These standards, known as the United States standard tobacco sizes, are now available in handbook form, with charts illustrating the sizes. These charts cover all the sizes and length variations necessary in assorting tobacco as to length for commercial pur-

poses. There are charts for 1, 2, 4, 6, and 8 inch variations in length. The range and variation of each size are shown in inches and centimeters. Figure 234 illustrates plans for constructing three sizes of sizing boards for hand or bundle sizing tobacco, the first two of which are suitable also for leaf sizing. The dimensions of these boards are in accordance with the United States sizes for tobacco. They show the range of the 1-inch, 2-inch, and regular 4-inch sizes in inches and the United States size numbers used to designate these sizes.

Usage of Type Classification and Grades

The type numbers and the tentative standard grades are used in stating types and grades on warehouse receipts and certificates issued under authority of the United States warehouse act. They have been used successfully for the past four years in administering this law. The cooperative associations are using the standard grades as a basis for settling with their members, and as a basis for arriving at the collateral value of the tobacco in obtaining loans. More than a billion pounds of tobacco have been graded on Government standard grades. Bankers have loaned many million dollars on Federal warehouse receipts with the standard grades as the basis for collateral value, each grade having a fixed loan value per hundred pounds of tobacco. The use of the grades by the cooperative organizations has exerted a marked influence on farmers as a whole. With some knowledge of what constitutes a grade placed before them they have been enabled to better assort and prepare their tobacco for market. The department's statistical information on acreage, production, and prices of tobacco is also based on the type classification. Other public agencies dealing with tobacco are fast coming to use the department's type classification as a basis. The use of this classification and the grades will gradually result in discussing tobacco in terms which will mean the same to all interested parties and thereby make for a more intelligent marketing of the crop.

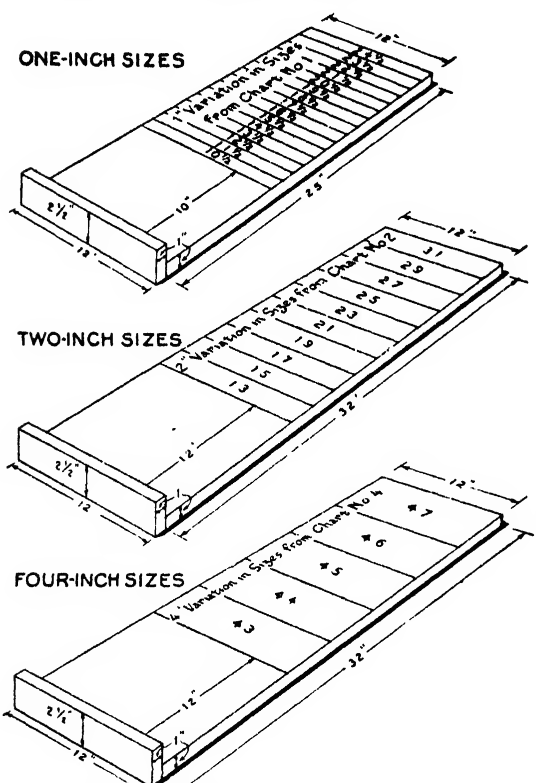

FIG. 234.—Plans for constructing three sizes of tobacco sizing boards

F. B. WILKINSON.

TOBACCO Not Always Helped by Rotation That continuous culture of any particular crop on the same soil very commonly leads, sooner or later, to decreased yields must have been observed in the earliest days of agriculture. Doubtless the primitive form of crop rotation consisted in alternately cropping and resting the land or, in other words, following a rotation of farm crop and a crop of weeds. A hundred years ago scientists who made a study of the subject stated that replacing the weeds in this rotation by useful crops, so as to produce something of value on the soil each year, was to be considered as one of the great advances in the development of agriculture. Practical experience over a long period has abundantly proved the value of systematic crop rotation when applied to many crops, especially when legumes and other soil-improving crops are included in the rotation. It appears, however, that under some conditions tobacco can not be satisfactorily grown in rotation with various other crops.

The early settlers learned that the tobacco plant grew well on virgin land and on old land which had remained idle for a time. It was found also that in many cases after a few crops of tobacco had been grown the land became "tobacco tired," even though excellent yields of other crops could still be produced. Recent study of the problem indicates that as a rule these tobacco-sick soils are not improved, so far as concerns tobacco, by addition of fertilizer, manure, or lime.

Cropping System Responsible

The system of cropping seems to be an important factor in the development or persistence of the trouble in the soil. Although continuous culture of tobacco may lead to the tobacco-sick condition of the soil, the use of leguminous or nonleguminous cover crops or rotations with various other crops may aggravate rather than remedy this condition. In this disease the roots of the tobacco plant fail to make normal growth and are brownish in color so that this trouble is often spoken of as brown root rot. This trouble seems to be distinct from the well known black root rot which is a fungous disease. So far no plant parasite or germ has been found to be connected with the disease and its exact nature has not been determined.

It is remarkable that crops like tobacco and its relative, the tomato, which are most susceptible to this disease are less active in producing it or in intensifying its effect than are other crops like corn, timothy, and rye on which the disease has little effect. Here is a case, then, where a crop may be injured rather than benefited by use of winter cover crops or the usual sort of crop rotation system intended to improve the productiveness of the soil. To bring out this fact more clearly some results of recent cropping tests may be cited. On sandy loam soil of a tobacco farm in Massachusetts a timothy sod was turned under in the spring. A liberal application of fertilizer was made to the soil and rotations including various crops were started. Although in the first year corn yielded more than 100 bushels per acre after the timothy, the yield of tobacco was only about 500 pounds. By continuing tobacco on the same land the yield two years later had increased to more than 1,600 pounds,

while after two crops of corn the yield was 340 pounds; after two years of clover it was 480 pounds, and after two years of timothy, 280 pounds. Where the land remained idle for two years the yield of tobacco was more than 1,600 pounds.

FIG. 235.—Tobacco growing on a fine sandy loam soil in southern Maryland. No cover crop is used and the tobacco is grown on the same soil each year. Note the uniformly good growth

Tendency Not in All Soils

The tendency to become tobacco-sick is not found in all soils. The above cropping tests were repeated on another tobacco soil at the Connecticut tobacco substation located at Windsor and in this in-

FIG. 236.—Tobacco growing under exactly the same conditions as that shown in Figure 235 except that rye is grown as a winter cover crop each year. Note the small and uneven growth of the plants. Legumes and a number of other crops when used in the rotation may produce the same sort of injury. This injury, however, does not occur in all soils

stance there were no important differences in effects of the various crops on the yields of tobacco. It is well known that some lands have grown tobacco continuously for more than a half century without any loss of productiveness. There are also some lands on which tobacco has long been grown with satisfactory results in rotation with wheat, clover, timothy, and corn. On the other hand, the

tobacco-sick condition has been observed on sandy, sandy loam, and heavy loam types of soil and in various tobacco-growing sections.

Another important fact about the brown root-rot disease is that seasonal conditions may greatly modify the effects of the cropping system. On a fine sandy loam soil in southern Maryland hairy vetch as a winter catch crop has practically doubled the yield of tobacco in some years, whereas in other years the yield of tobacco has been considerably less than where no catch crop has been used. Similar results have been observed with rye and timothy as winter cover crops. The greatest depressing effect of these crops on the yield of tobacco usually occurs in wet seasons.

About the only simple remedy for the brown root rot known at the present time consists in resting the land for a year or longer, thus allowing the weeds to grow. It is a surprising fact that for tobacco culture on many soils no combination of crops in the various rotations which have been tried equals an alternation of tobacco and weeds. It appears, however, that one of the essential features of this plan is to allow the soil to remain undisturbed for a time. The exact function of the weeds which ordinarily grow under these circumstances has not been determined. It seems certain that the weeds at least produce no harmful effect on the tobacco, such as is apt to occur from a number of our ordinary farm crops when grown in the rotation.

W. W. Garner.

TOBACCO Markets Show Cigarettes in Growing Favor

Tobacco habits change. Twenty-five or thirty years ago cigarette smokers were often referred to as "cigarette fiends." To-day the fiends are so far in the majority that the appellation is discreetly omitted. At that time it was no uncommon thing for boys to learn to chew tobacco, whereas to-day the cigarette claims their attention. The cigar, which for centuries has been the aristocrat of the tobacco world, only with difficulty maintains its high position, while the humble and unpretentious pipe continues to be the companion of the rich and the solace of the poor. Snuffing is no longer the chosen habit of royalty, but in perverted form has its addicts among the laboring classes, especially the colored population.

Changes in tobacco-consuming habits have a deeper significance than as mere expressions of popular fancy; they effect economic changes of great importance among the growers of tobacco to an extent which is little understood by the average tobacco consumer.

The changes that have occurred in tobacco-consuming habits during the past 25 years are indicated in Figure 237.

In its work of estimating the acreage, production, and value of the tobacco crop of the United States, the department finds it necessary to give careful study to the various types of tobacco produced and to treat each type as a separate crop

Public Ignorant of Tobacco Culture.

To the vast majority of tobacco users tobacco is a sealed book so far as a knowledge of the characteristics, methods of culture, mode of curing, and manufacturing qualities of the tobacco of different

sections is concerned. Perhaps no other important crop is so little understood by the consumers, and yet few other products of the soil are so widely used. That is not surprising when it is considered that hundreds of thousands of dollars are spent annually in advertising the virtues of the manufactured product, with rarely a mention of the history of the tobacco itself. Advertisements do not call attention to the back-bending labor of transferring the tender plants from seed bed to the field, the cultivation, the frequent suckering, the frequent and highly disagreeable task of searching each leaf for worms, or the days and nights of ceaseless vigil in tending fires during the curing of the crop, where heat is applied. Much less do they refer to the tedious labor of stripping the tobacco and tying the leaves into hands before sending to market.

Tobacco is raised on a commercial scale in 18 States. In most of these States the production is highly localized.

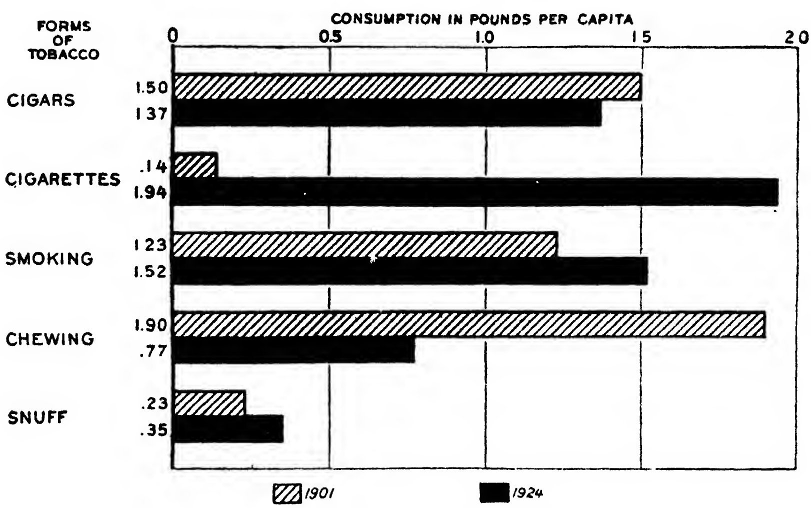

FIG. 237.—Changes in the per capita consumption of tobacco in the United States from 1901 to 1924. The most notable change during the quarter century has been the increased consumption of tobacco in the form of cigarettes

Twenty-nine types of tobacco are recognized in the official classification of American-grown tobacco published by the department, divided into six classes: These types are flue cured, comprising four types of tobacco cured in airtight barns by heat from large galvanized-iron flues extending under the hanging tobacco, fire-cured, comprising four types cured in the smoke of open wood fires; air-cured, including five types in which the tobacco is cured by the free circulation of air, no artificial heat being applied. The foregoing groups include all tobacco except that used in the manufacture of cigars. Cigar tobacco is all air-cured and is divided into three groups—filler, binder, and wrapper.

Tobacco as a crop is extremely sensitive to slight variations in soil and climate. It is found, therefore, that soils suited to one type of tobacco will seldom prove suitable for some other type. The result of this has been the localization of tobacco production into definite, well recognized "type districts," in which distinctive curing methods

combined with soil and climate have evolved types of leaf peculiar to those districts, and adapted to different manufacturing needs. For instance, it was found that the light, sandy soils of southern Virginia, the Carolinas, and parts of Georgia and Florida produce a light, aromatic tobacco which when cured in heat but without smoke, possessed a bright yellow color. This is our most important cigarette tobacco and besides entering into all or nearly all of our cigarette blends is sold in enormous quantities to Great Britain, China, and other foreign countries. A generation ago, when tobacco chewing was popular and cigarette smoking less popular than it now is, bright flue-cured tobacco was used for plug, fillers, and wrappers.

Aroma of American Leaf Unequaled

Efforts have been made in many foreign countries to duplicate the flue-cured tobacco of this country, and while in some of them, notably in China, it has been found possible to duplicate the American product in appearance, the aroma which distinguishes the American leaf and makes it so popular has never been equaled elsewhere.

The dark fired types of tobacco differ widely from the flue-cured in their soil requirements, appearance, method of curing, and the uses to which they are put. In contrast with the relatively small, thin leaves of flue-cured, those of the dark fired types are very large, drooping, heavy, and gummy. It is generally true that heavy, dark soils produce heavy, dark tobacco. Dark fired tobacco is produced on the red clay soils south of the James River in Virginia and on the loams of western Kentucky and Tennessee, a section commonly known as the "Black Patch." When harvested, the stalks are hung on sticks suspended tier upon tier on the poles of large curing barns. Curing is effected by the aid of slow oak or chestnut wood fires which are kept going for as much as two weeks. Curing by this method is a fine art and the care and skill of the farmer during this critical period have a very direct bearing on the quality of his product.

The result of this combination of type, soil, and method of curing is a heavy-bodied leaf of a rich mahogany-brown color, of silky, oily texture, and possessing a creosotic odor imparted by the smoke.

Dark fired tobacco has long been an important item in our foreign trade. It is used abroad for cheap cigars, smoking, chewing, and snuff. Its use in this country is limited. Small quantities have been used in the manufacture of cheap cigars, which find a sale among immigrants, particularly those from southern Europe. Some is used for plug wrappers. Its greatest use is in the manufacture of snuff.

Dark Fired Market Reduced

Foreign countries are finding it possible to produce similar tobacco, and this fact together with a world-wide tendency among consumers to turn to cigarettes, has greatly reduced the market for dark fired tobacco in recent years. Prices paid to growers have become unremunerative, therefore, and production has fallen off.

The principal type of tobacco in the air-cured group is Burley. It was developed in southern Ohio and in the bluegrass section of Kentucky, and owing to its superior qualities for a variety of manu-

facturing purposes the demand for it has been very great and the production has spread back into the mountains of southern Kentucky, West Virginia, Virginia, North Carolina, Tennessee, along the Ohio river in Indiana and across Missouri. The greatest production is in Kentucky, Tennessee, and Ohio. It appears to thrive best on well-drained limestone and shale soils.

The harvested tobacco is hung in open barns and remains there until thoroughly cured. Colors range from various shades of yellow to dark red, and the uses to which various grades are put depend primarily upon the "body" of the leaf and the color. When the increasing manufacture of cigarettes began to absorb the flue-cured tobacco, manufacturers of chewing tobacco turned to Burley for their supply of leaf. For this use Burley proved ideal, owing to its mild character and its extraordinary capacity for absorbing the sweetening sauces used. Within the past 15 years Burley has become an important cigarette type, and, in addition, most of the smoking tobacco on the market is made from this type.

FIG. 238.—Harvesting tobacco in southern Maryland

Production of Burley tobacco has reached enormous proportions, more than 300,000,000 pounds of the leaf having been produced in 1926, but there are indications now that supply has exceeded demand.

Other air-cured types are Green River, a snuff and export type, one-sucker, used for chewing and export, sun-cured, a chewing type, and Maryland export. The latter type dates back to early colonial days and is a cigarette and export type.

Cigar Type Distribution

Cigar types have a wide geographic distribution and cover a wide range of qualities and characteristics. For the most part they are produced under open field conditions according to the methods used in

tobacco types already referred to. The finest cigar-wrapper tobacco produced in this country is grown under artificial shade in the Connecticut Valley and in a small area of Georgia and Florida. The principal producing districts are the Connecticut Valley, Pennsylvania, the Miami Valley of Ohio and Indiana, and Wisconsin.

All of these types of tobacco are reported upon individually, as may be seen by consulting the statistical summary in the Yearbook, where the acreage, yield per acre, production, price per pound paid to growers, and the farm value for each type in each State are shown for 1925 and 1926. In addition, the department issues a weekly summary of prices paid at representative markets in several important districts, showing the high, low, and average prices of different grades of tobacco, such as wrapper grades, filler grades, etc.

The importance of tobacco is indicated by the fact that the production of all types in 1926 is estimated at 1,323,388,000 pounds, with an estimated return to the growers of $245,113,000. An unusual feature connected with tobacco is the fact that the Government derives a greater revenue from the manufactured product than the growers receive for their crop. The farm value of tobacco in 1925 was $234,-253,000; the taxes on manufactured tobacco collected during the fiscal year 1925 amounted to $345,247,210.96.

CHARLES E. GAGE.

TOMATOES for Canning Now Standardized

The development of definite grades for canning tomatoes promises to eliminate the confusion now caused by the use of loose terms in contracts. There is a growing sentiment among both growers and canners that is favorable to the adoption of more definite specifications. Heretofore contracts have almost invariably called for "sound red ripe tomatoes." On first consideration this specification would seem anything but vague but, as a matter of fact, neither grower nor canner expects strict conformity to the requirement. As a practical matter the contract term means one thing when prices are high and something very different when prices are low. Such an arrangement inevitably results in general dissatisfaction.

The desire for definite uniform grades goes beyond the necessity of improving business relations by the clarification of contract terms. Canners have made a practice of paying a uniform price for all tomatoes which they were willing to accept. In a general way this price was based on the average quality of receipts. Obviously, such a practice has operated to penalize the best growers to help the poorest. High-quality tomatoes are not only canned at a minimum cost but also produce a high-grade manufactured product. Such stock should command a premium, and a proper recognition of this principle will result in better production methods and better handling practices.

In 1923 the United States Department of Agriculture undertook the task of formulating the necessary grades. The study was indorsed by representative canners and growers. Briefly, the problem was to devise grades which would properly recognize variations in commercial value and at the same time be simple enough to be prac-

tical in actual operations. After three seasons of investigations the department recommended grades which seem to meet these requirements.

Basis for Sampling Provided

The United States grades provide a basis for sampling at the cannery. The grower does not sort the tomatoes into two grades but delivers all usable stock, leaving only the culls in the field. At the factory each load is examined by inspectors to determine the percentages of each grade. A premium is paid for the U. S. No. 1 grade, but the grower is docked for culls.

During the 1926 season the first official inspection of canning tomatoes was tried in an experimental way and with considerable success. The following method was pursued: The inspector selected several baskets of tomatoes from different parts of the load. These

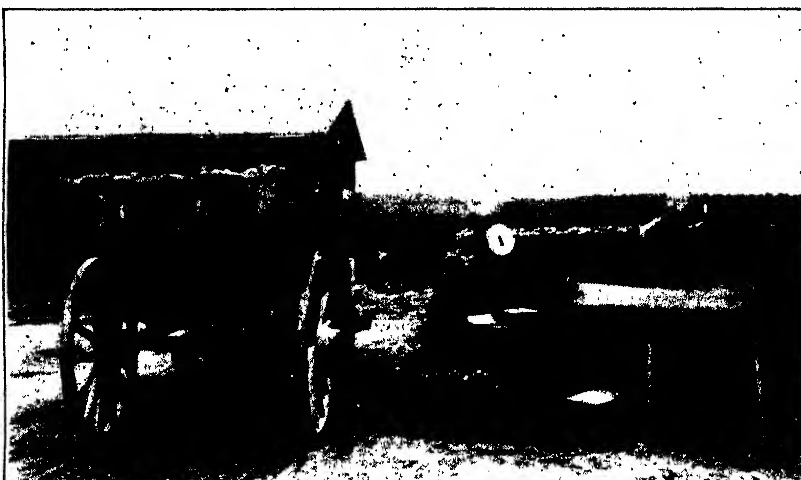

FIG. 239.—Inspecting canning tomatoes on the basis of United States grades

were dumped upon a sorting table and classified into No. 1's, No. 2's, and culls. Payment for each load was made on the basis of these results, which were entered upon a certificate provided for that purpose.

A study of inspection certificates shows a wide range of quality, from 10 per cent of U. S. No. 1 and 39 per cent of culls in the poorest load to 77 per cent of U. S. No. 1 and no culls in the best load. The price paid for the best load was 27 cents per 20-quart hamper, whereas that of the poorest load was only 15 cents per hamper.

The quality of canning tomatoes may be greatly improved by more careful attention to harvesting practices. The principal factors affecting grade are decay, ripeness, and color. Decay is difficult to prevent, but the degree of ripeness and color may be controlled to a considerable extent by the grower.

Grades for canning stock constitute a new venture in fruit and vegetable standardization. Certainly the progressive grower should recognize the advantage of trading on a basis which gives proper recognition to variations in quality. The real success of the United

States grades will depend primarily upon the willingness of the canners to pay a suitable premium for U. S. No. 1 tomatoes, thus giving the grower a real inducement to produce the desirable stock necessary for a superior finished product.

W. E. Lewis.

TOMATO Varieties Developed for Wilt Resistance The new tomato varieties, Marvana, Marvelosa, Marglobe, and Norduke, have been develepode by hybdridization and selection in the United States Department of Agriculture. The first three have been distributed for trial the past two years; the last, for several years.

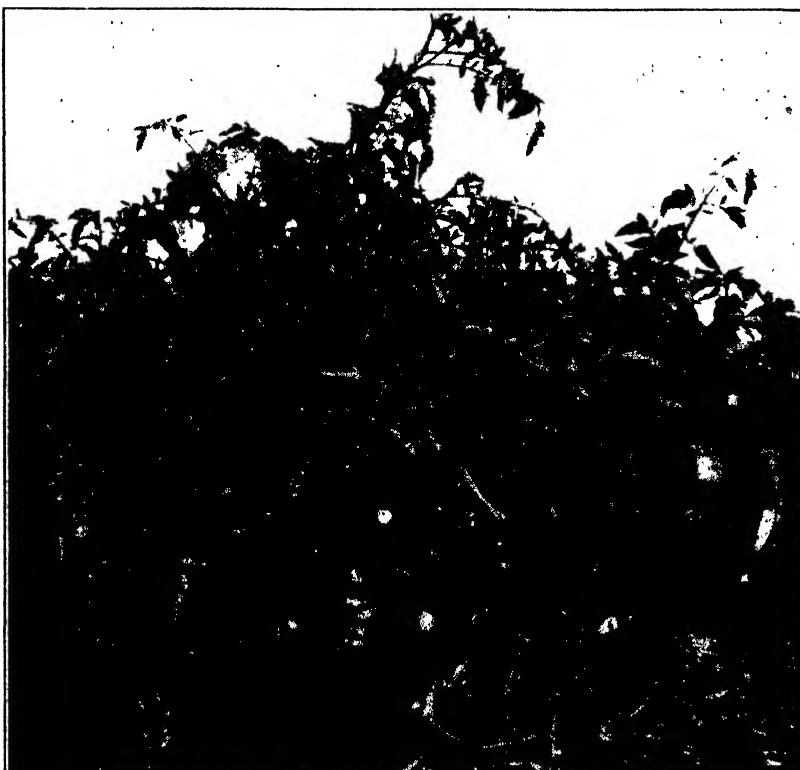

Fig. 240.—Marvana plant, showing type of foliage and fruit. Grown on heavily wilt-infested soil

These varieties are highly resistant to Fusarium wilt and somewhat resistant to early blight, Septoria leaf spot, and leaf mold. Moreover their fruits are resistant to nail-head rust and puffiness, two frequent causes of heavy loss in tomato-trucking regions of the South.

Marvana (fig. 240) is a first-early red-fruited variety. It resembles Earliana in earliness, in size, and shape of fruits, and in type of foliage but its fruits are usually smoother, more crimson and slightly less acid and its foliage a little heavier, denser, and more resistant to

drought and blights. In the department fields it has been fully as early and productive as Earliana.

Marvana was developed from a cross between Marvel and Earliana. It has inherited much of its vigor and disease resistance and a little of its color and smoothness of fruit from Marvel, yet closely resembles Earliana in its small leaflets and spreading habit of vine.

A First Early Variety

Marvana is distinctly a first-early variety. It usually sets fruits freely and produces a good early crop, but its fruits are not as large

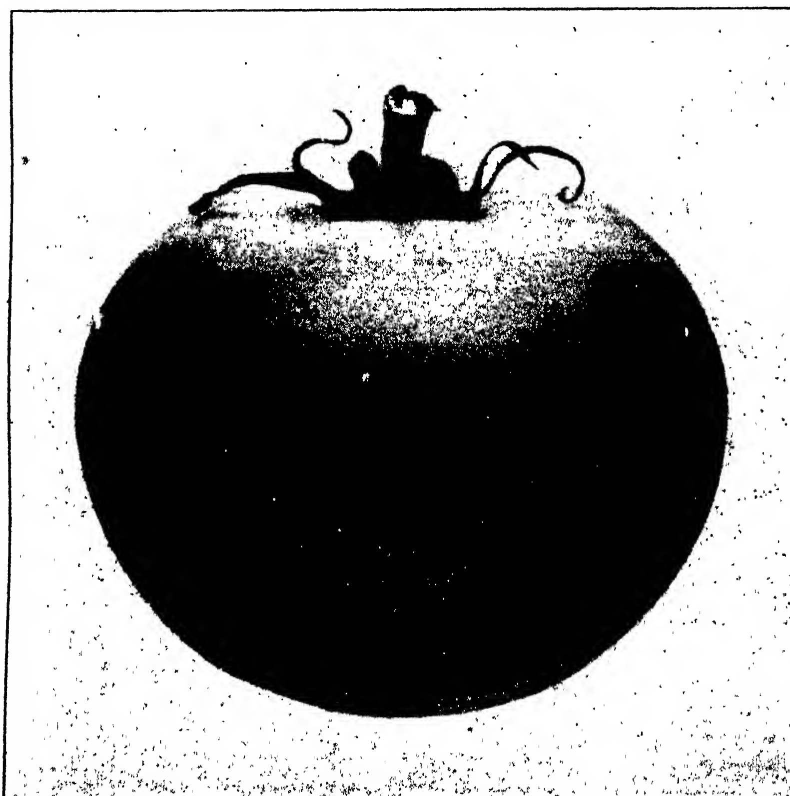

FIG. 241.—Typical Marvelosa fruit. Natural size

and meaty as those of the best second-early varieties. It has given good results in both greenhouse and field and is worthy of trial wherever early fruits bring a high price.

Marvelosa is a second-early pink-fruited variety. It produces about the same quantity and type of foliage as other second-early varieties, such as John Baer and Bonny Best, and under favorable conditions matures a good crop of medium large, smooth, meaty globular fruits. Fig. 241.) The fruits ripen uniformly and are very smooth even around the stem end. It is approximately as early as Globe.

Marvelosa originated from a cross between Ponderosa and Marvel. It possesses the pink appearance and transparent skin of the Ponderosa fruits and the vitality and disease resistance of the Marvel vine.

Marvelosa is suitable for trucking and forcing. It is in use in some of the trucking regions of the South and in many greenhouses in the Middle West where the trade favors pink fruits.

Marglobe is a second-early red-fruited variety. Its plants are medium large, erect and well covered with foliage which shades the

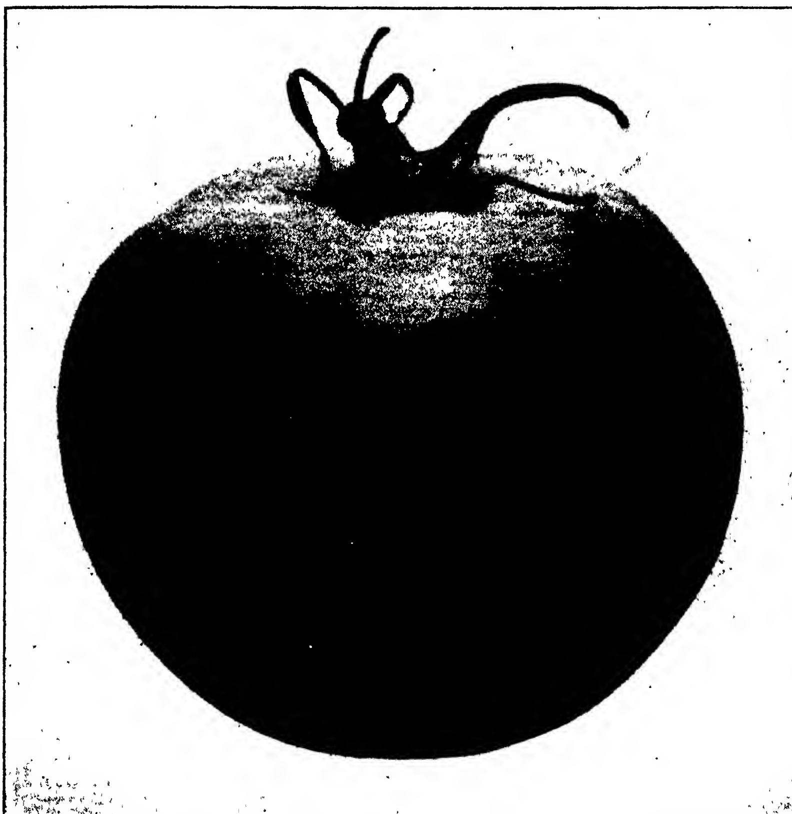

FIG. 242.—Typical Marglobe fruit. Natural size

fruits, enhances development of red pigment and eliminates much sun scald in hot weather. The fruits (fig. 242) are large, smooth, globular, meaty, almost coreless, and deep scarlet in color. They ripen uniformly even at the stem end, resist cracking well, and maintain a good quality throughout the picking season. Moreover they can be held for a considerable time without spoilage.

Free Fruit-Setting Habit

Marglobe has a very free fruit-setting habit, even under conditions in which most late varieties make excessive vine growth. In the

department's fields single plants have not uncommonly borne from 80 to 125 good-sized fruits at one time. Moreover the plants keep setting fruits at the tips of the branches, which results in a continuous succession of pickings throughout a relatively long bearing period.

Marglobe was developed from a cross between Globe and Marvel. It surpasses Globe in earliness and is similar to it in size and shape of fruits, but closely resembles Marvel in vigor, type of vine, and resistance to diseases.

Marglobe is well adapted for trucking and canning. Its earliness favors its adoption in canning regions of Northern States where

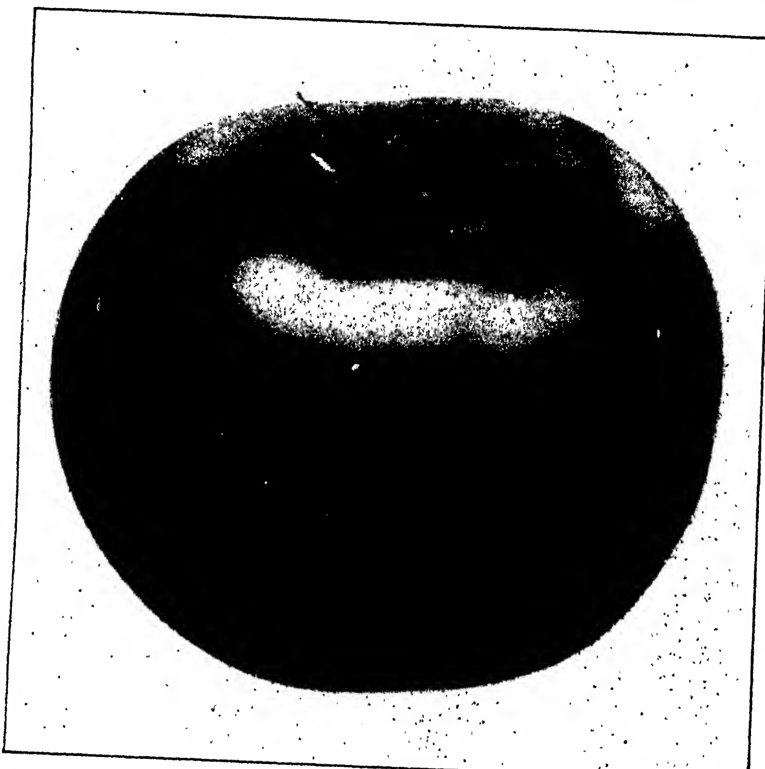

FIG. 243.—An average Norduke fruit. Natural size

frosts and short seasons are common. Its heavy fruit-setting habit also fits it for many localities where prolonged heat or rainy weather often causes late varieties to go to vine. In some places it may serve a dual purpose by providing a few early pickings for use in the fresh state in the cities and several late pickings for manufacture at the local canneries. Although this practice is commonly used in some localities the varieties grown have a shorter bearing period and usually produce a poor quality of fruit after midseason. Because of its earliness and quality of fruit Marglobe also offers, in many places, possibilities of increasing the length of the canning and pulping season.

On fertile soils favorably supplied with moisture Marglobe usually produces heavy yields of large fruits; on dry soils, however, it is not always able to produce large fruits because of the number set. From a 3½-acre field of Marglobe at the Arlington Experimental Farm, Rossyln, Va., 22 tons of excellent fruit per acre was picked in 1925, which is approximately seven times the average yield for the State. Quite as large yields were obtained by a number of others who made a test of this variety on good soil.

Norduke is a large, late, red-fruited canning variety of the Stone type. Its plants are large, erect, and somewhat dense. Their branches remain upright longer than those of most other varieties, possibly because of their woody stems, but are ultimately drawn down by the weight of the fruit. The fruits (fig. 243) are large, smooth, oblate, fairly meaty, and comparatively free from cracks. A few are also somewhat shouldered at the stem end– a character by which the fruits of this variety may be distinguished from those of Stone and other varieties of this type.

Has High Resistance

Norduke was developed from a cross between Norton and Duke of York (selection from Buckeye State) but is more like Norton in size, shape, and quality of fruit. It excels both parents in resistance to Fusarium wilt and Septoria leaf spot.

Norduke withstands drought better than most other varieties and usually produces good crops on rather dry or moderately moist or fairly sandy soils but is not well adapted to wet soils. Although not adapted to as wide a range of conditions as Marglobe, it has given good results in most States and is gradually increasing in use in the canning regions of the East, Middle West, and Pacific coast. On the Arlington Experiment Farm it usually produces from 10 to 12 tons of excellent fruit per acre.

Fred J. Pritchard.

TON-Litter Aim Improves Hog Raising Methods

Not many years ago the term "drove" was in common usage when hogs were collected from farms and started for market on foot. Nowadays, shipments of hogs are referred to as truck loads or car lots.

Similarly, the weights of litters of pigs at marketing age are being measured to-day in terms different from those of the old days. Formerly, in feeding out hogs for market, large litters were commented upon as they are to-day for size, uniformity, and the number of pigs they contained, but the weights of the hogs were specified in pounds. To-day, the aggregate weight of the litter sometimes exceeds a ton and there has developed much popular interest in the so-called ton-litter movement, which has led to this result.

The idea was conceived in 1921 by James R. Wiley, extension animal husbandman, of Purdue University. The production of a single litter of pigs weighing a ton when 180 days old seemed a practical goal for the swine grower.

Projects were begun under the name of the Hoosier Ton-Litter Club, and during 1922 there were successfully produced in Indiana 36 litters of pigs which met this qualification when 180 days old.

Considerable publicity followed this accomplishment and each succeeding year has seen the idea spread to other States until the term

FIG. 244.—A large litter of uniform, vigorous pigs underlies success in producing ton litters

FIG. 245.—Rapid growth during the growing stage is essential for successful ton litters

"ton litter" is now well understood wherever animal husbandry is taught and hog competitions are held.

In 1925 approximately 1,500 litters in 28 States were entered in trials for the goal, and while nearly half failed there were 767 officially certified as having qualified as ton litters, including 7 litters weighing well over 2 tons apiece.

The ton-litter movement is proving to be a valuable lesson to the hog industry, not so much by teaching farmers how to produce a given bulk of pork, but by furnishing them a practical means of measuring their methods of breeding, feeding, and management. Knowledge gained in the experience of ton-litter production, applied to the herd, results in the establishment of breeding animals of desirable type and quality, the elimination of sows which are not good mothers, and the production of pigs which feed out well and uniformly from birth to finish weights.

Ton-litter success has been gauged to a considerable degree by the individual merit of the sows in the various breeds. Purebred pigs, without regard to any particular breed, have formed most of the litters which have been fed successfully to ton weights.

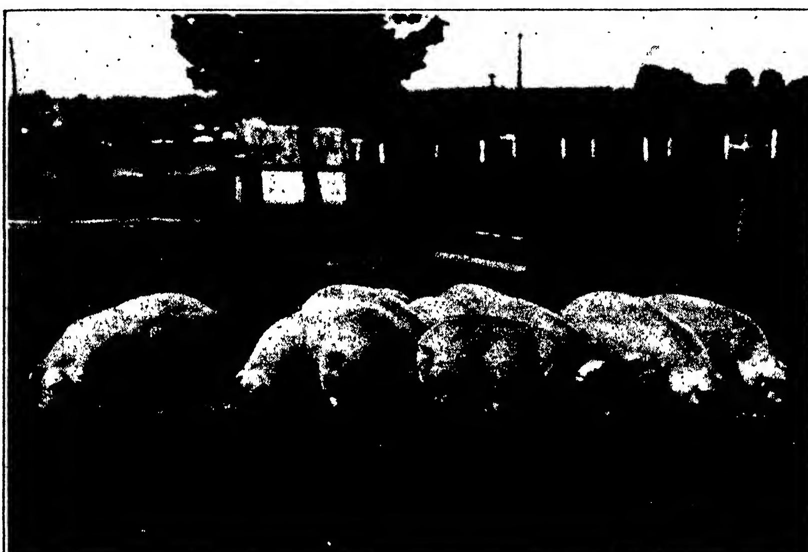

FIG. 246.—Ton-litter pigs furnish desirable weights and attractive carcasses for the market

Examination of the records of the feeds used in the production of ton litters shows that no stereotyped feed mixtures are required and no uncommon or unusual feeds are necessary.

No stimulation is necessary other than that contained in the usual grains, protein supplements, and mineral feeds combined with the exercise, good air, and sunlight usually recommended in swine husbandry.

Ability to recognize a good prospective sow for ton-litter success, and to carry through the details of management to a successful conclusion is an indication that the principles of swine production are well in hand.

The application of this knowledge to all litters and breeding animals in a herd, season after season, regardless of the final weight of litters, will insure satisfactory returns for the owner.

S. S. Buckley.

TRACTOR Farming in Dry Regions Has Advantages The topography of a certain dry-land wheat area in eastern Oregon ranges from nearly level to rolling slopes and is broken by canyons. The soil varies from a sandy loam to a silt loam type and is free from loose surface stones. Rainfall is very limited and dry-farming methods are well established. The prevailing farm practice is to clean-cultivate the land one year and follow with a crop of grain the succeeding year.

In these wheat areas land values and yields per acre are relatively low while the wages of hired labor are relatively high, so that farmers have found it to their advantage, within proper limits, to spread their work over a maximum acreage which may return little to the acre, but much for the labor and capital expended. Farms are large, adapted to the use of large-size machinery, and require large amounts of power. To provide this power many farmers have turned to the farm tractor.

FIG. 247.—Harvesting and threshing wheat with a 16-foot cutter-bar combine drawn by a 40-horsepower tractor. An outfit of this size will cut and thresh about 35 acres per day

Many of these tractor owners have tried various types of tractors, some of which were not suited to their conditions. The consensus of opinion appears to be that the crawler or track-laying type is most satisfactory. This type is built low to the ground, does not overturn easily, and is well adapted for use on the rolling slopes on these farms.

Forty-Horsepower Size Popular

Tractors of from 10 to 50 drawbar horsepower have been tried out in this area, but those of the 40-drawbar horsepower size are most in favor, especially on the larger farms. These tractors of the larger sizes are used for pulling the larger-sized combines and for fitting the land with large units of tillage equipment. (Fig. 247.)

Large units of power afforded by the tractor permit these farmers to do large amounts of work at rush periods and to do the work more nearly at the proper time. In plowing, farmers with tractors accomplish nearly two and one-half times the amount of work done with

horses in the same time. In other operations such as harrowing, disking, weeding, and drilling tractor farmers do from two to three times as much work as those who use horses. On some farms where horses alone are used for motive power the difference is not so great because of the use of large teams and machines. No doubt big teams, used with proper eveners and hitches, should have a larger place than they now occupy on many of the horse-operated farms.

The operations for which the tractor was most generally used (plowing, disking before plowing, and harvesting with the combine) are operations which replace a large number of horses and at the same time save man labor.

Equal to 22 Horses for Plowing

In plowing, the tractor farmer of eastern Oregon accomplishes an amount of work equivalent to the work of 22 horses for the same period of time; in disking before plowing, the equivalent of 33 horses; and in harvesting and threshing with the combine, the work of 25 horses.

The use of tractors in this area results in a saving of man labor in the performance of these various operations which varies from 0.3 to 0.6 man hour per acre.

Expressed in terms of total man labor saved for an entire year and horses displaced through the purchase of a tractor, this study showed that on tractor farms there was an average of six less head of work stock than on nontractor farms that were approximately the same size as the tractor farms. It is believed that further reductions in the number of horses could profitably be made on many farms after the purchase of a tractor. The total man labor for the year was 0.8 month less on tractor than on nontractor farms. While this saving is small the real advantage of the tractor is in having a large unit of power available when needed, thereby allowing the work to be done in season.

Competent Tractor Operator

Of the disadvantages of tractor operation, lack of skill on the part of the tractor operator is of major importance. The skill required to operate a tractor successfully is probably greater than for most other kinds of farm machinery. Unless the tractor owner is mechanically inclined and operates the tractor himself or is able to hire a thoroughly competent tractor man, he is almost certain to find his tractor an unprofitable investment.

Cost of operation is only one of the factors that should be taken into consideration in deciding whether the tractor should be substituted for horses. Costs of using tractors and horses vary as changes occur in the price of work stock, feed, tractors, fuel, oil, etc.; and while the cost of motive power was somewhat higher on tractor than on nontractor farms during the period 1920-1922, prices of horses and feed were relatively low during these years. Many farmers, particularly those on the larger farms where large acreages are tended in a comparatively short time, prefer the tractor to horses. In recent years improvements have been made in the type of tractor generally used in eastern Oregon. The machines are lighter and consume less

fuel in doing a given piece of work. The bearings in some of the later makes are better protected from dust and probably cost less for repairs than some of the older makes.

Although the use of a tractor usually means a greater outlay of cash for operating expenses than the use of horses, tractors take much of the drudgery out of farm work and many farmers derive more satisfaction from their use than from the use of teams.

R. S. Washburn.

TURPENTINE Lease Form Adapted to Farmers' Needs In these days of comparatively good prices for turpentine and rosin, southern farmers are constantly receiving offers for turpentining privileges on their land. Many men, seeing their neighbors' timber wrecked by too early working of small trees, too deep chipping, too much wood being taken off each week, and by the working of more faces than the trees would stand, are reluctant to allow their own timber to be chipped. Yet experiments at Starke, Fla., on the Florida National Forest near Pensacola, and at other points, have shown that timber does not suffer severe loss, either by death or stunting, under conservative turpentining. The loss in the experimental trials at Starke, in second-growth slash pine over a four-year operation, has been at the rate of one-half of 1 per cent of the trees annually. In young long-leaf pine in four years the loss has averaged a little over one-half of 1 per cent annually.

Conservative work can be assured the timber owner only by a written agreement with the operator in which certain restrictions are placed upon the work and good practice is required throughout. Leasing timber by the block or "lot" with no diameter limit set, below which trees must not be chipped, is apt to result in close cupping and consequent timber damage. The only safe way is to lease by the crop, designating specifically the trees which are not to be chipped. A main point on which further information is needed is the size of the smallest tree which the owner should allow to be chipped. But in the light of the best information available at present it is considered that a 9-inch limit is advantageous to both the timber owner and the operator.

The following form of contract contains the essential provisions for safeguarding the timber owner's interests. These provisions are particularly adapted to young stands of timber. The rental charges per face and other financial provisions vary from year to year, and the figures used in the following lease (in italics) are for purposes of illustration only, roughly representing conditions as they prevailed in 1925. In drawing up a contract the italicized words and figures in this lease would be omitted and the blanks thus made would be filled with appropriate words and figures.

NAVAL STORES AGREEMENT

I, John Doe, of *Good Pine*, State of *Florida*, hereby agree to work for naval stores certain timber on the lands owned by *Richard Roe, Tall Timber, Fla.* Said timber is all the long leaf and slash pine timber not excepted under the terms of this agreement located on an area of about *40* acres to be definitely

designated by *Richard Roe* before cupping begins in *section 9 township 4 North, range 6 East, Tallahassee meridian and base line,* upon which it is estimated that *2,000* cups, more or less, may be placed. In consideration of the granting of this privilege to *me* for a term of three years *I* do hereby promise to pay *Richard Roe* the sum of *$300*, more or less, as may be determined by actual count at the rate of *$150* per thousand cups, payable on or before *March 15, 1926.*

And *I* further promise and agree to work said timber in strict accordance with the following conditions:

1. No tree will be cupped, chipped, raked, or worked in any manner until payment has been made in accordance with the terms of this agreement.

2. Title to the product of the timber included in this agreement will remain in *Richard Roe* until it has been paid for as herein prescribed and removed from the tree.

3. No timber will be cupped except that on the area designated by *Richard Roe;* and all timber on that area will be cupped except as herein specified.

4. No marked tree and no tree 9 inches or less in diameter at a point 2 feet above the ground will be cupped; not more than one cup will be placed on trees from 9 inches to 14 inches, inclusive, in diameter; not more than two cups will be placed on trees from 14 inches to 22 inches, inclusive, in diameter; and not more than three cups will be placed on any tree.

5. The greatest depth of streaks will not exceed one-half inch, excluding the bark. The width of the streaks will be so regulated that not more than one-half inch of new wood will be taken off at each chipping. The faces chipped or pulled the first season will not exceed 15 inches in height from the shoulder of the first streak of the season to the shoulder of the last streak of the season, including both. The faces chipped or pulled in subsequent seasons will not exceed 15 inches in height, measured in the same way. A No. 1 or smaller hack or puller will be used for chipping or pulling. Bars or strips of bark not less than 4 inches wide in the narrowest place will be left between faces, and this width shall not be lessened as the faces progress up the tree. Where more than one face is placed on a tree, one bar between them will not exceed 8 inches in width. The first streak at the base of the face will be made at the time the apron or gutter is placed. Not more than one streak will be placed on any face during any week. Faces not chipped in accordance with these specifications may be marked out and the cups removed by *Richard Roe.*

6. A cupping system satisfactory to *Richard Roe* will be used, and the cups and aprons or gutters will be so placed that the shoulders of the first streak will be not more than 6 inches distant from the top of the cup, and the cups first placed will be as near the ground as possible. No wood will be exposed on any tree by removing the bark below the gutter or aprons.

7. No unnecessary damage will be done to cupped trees, marked trees, or to trees below the diameter limit. Trees that are badly damaged during the life of this agreement, when such damage is due to carelessness or negligence, shall be paid for at the rate of *$6* per thousand feet board measure, full scale. Trees split or wind thrown because of deep incisions for raised tins will be considered as being damaged unnecessarily.

8. No cups will be placed later than May 15, *1926*, without written permission from *Richard Roe*, and all timber embraced in this agreement will be cupped before said date. The cupping will proceed with all reasonable speed.

9. Unless extension of time is granted, all timber will be chipped, dipped, and scraped, the product and all cups, aprons, gutters, and nails removed, and each cupped tree thoroughly raked to the satisfaction of *Richard Roe* not later than December 31, 1928. Tins will be pulled out, not chopped out.

10. No fires will be set to the timber, underbrush, or grass on the area covered by this agreement without the written permission of *Richard Roe*, and during the time that this agreement remains in force *I* will, independently, do all in my power to prevent and suppress unauthorized forest fires on the said area and in its vicinity, and will require my employees and contractors to do likewise.

11. All cupped trees will be raked in a workmanlike manner for the space of 2½ feet around each tree during December of each year of the life of this agreement; and, if required by *Richard Roe* a fire line not less than 3 feet wide in the narrowest place shall be hoed or plowed around the area covered by this agreement in such a manner as to completely isolate it from adjoining lands. Natural fire breaks, such as creeks, swamps, roads, etc., may be utilized with the consent of *Richard Roe.* These fire lines must be made

and receive the approval of *Richard Roe* before any cups are placed the first year or new streaks made at the beginning of each subsequent year.

12. *Richard Roe* reserves the right to sell or otherwise dispose of and remove or have removed all dead timber and uncupped living timber from the area covered by, and during the life of, this agreement: Provided, That the removal of such material will not interfere with the operations of the purchaser.

This agreement will not be assigned in whole or in part without the written approval of *Richard Roe*.

The conditions of the sale are completely set forth in this agreement, and none of its terms can be varied or modified except in writing with the approval of both parties.

And as a further guarantee of a faithful performance of the conditions of this agreement, *I* deliver herewith a bond in the sum of *$500*, and do further agree that all moneys paid under this agreement will, upon failure on *my* part to fulfill all and singular the conditions and requirements herein set forth, or made a part hereof, be retained by *Richard Roe* to be applied as far as may be to the satisfaction of *my* obligations assumed hereunder.

Signed in duplicate this *twentieth* day of *December, 1925*. Witnesses (corporate seal, if corporation).

John Jones.
Tom Brown.

John Doe.
(Signature of purchaser.)
Operator.
(title.)

LENTHALL WYMAN.

TURPENTINE Pine Chipping to Get Highest Yields

Keen competition makes it necessary for the successful turpentine operator to keep down his costs, get the highest possible yield from his long-leaf pine and slash-pine timber, and maintain the vigor of his trees by proper working. Also the approaching shortage of suitable turpentine timber, with the consequent heavier charge for leases, is a powerful argument for avoiding all possible waste.

The first and most obvious step is to eliminate poor-yielding trees or those likely to die or dry face shortly after the cups have been hung. In old-growth timber, stag-topped trees and trees with dead limbs and very thin sapwood are apt to dry face. In young stands, trees crowded on all sides and with poor tops, thin foliage, and no taper should be marked out. Leaning trees and those with very crooked stems should not be worked. Trees less than 9 inches in diameter, 2 feet above the ground, give such small yields that only in times of very high prices is there any money in working them.

These smaller trees lower the average yield of a crop of faces surprisingly. For example, on a tract under lease by the Southern Forest Experiment Station near Starke, Fla., there are 3,330 faces on trees over 7 inches in diameter. These faces yielded 11.6 barrels of spirits for the 1925 season, or at the rate of 34.8 barrels per crop of 10,000 faces. If trees below 9 inches had been excluded the yield would have been 43.5 barrels per crop. The small trees alone yielded at the rate of only 24 barrels per crop. On the basis of average prices for the five-year period 1921–1925, the returns from trees 9 inches and over were $3,156 per crop. Operating costs, including leasing, working, stilling, and overhead, were estimated to be $1,814. The net profit was $1,342. Operating the 7 and 8 inch trees cost $1,619 per crop, the returns were only $1,709, and the net profit but

$90. Had 1924 prices prevailed there would have been an actual loss of $76.

Experience indicates that two-face trees should be at least 14 inches in diameter, 2 feet above ground, and three-face trees at least 18 inches.

Faces Should Be on the South

In general, faces should be on the south rather than the north side and below the heaviest branches. Faces placed above old "cat faces" or fire scars are apt to dry out and become nonproductive.

In facing trees no wood should be exposed below the point where the tins are inserted, because fires can not readily ignite faces with no exposed wood close to the ground. The tins should be no further from the ground than is actually necessary for placing the cup. The oblong cup is not so deep as other kinds and permits the tins to be placed lower. Tins should be inserted lightly, so as not to interfere with the circulation of the sap behind the face.

Faces should be so placed that at least 4 inches of uncut bark will always remain between them. Where only one face is put on a tree not more than a third of the bark should be cut away. Though wider faces may yield more for a year or two they do not keep up high yield, and are not best over a long period. Tests have resulted in exactly the same rate of yield from narrow faces and from faces twice as wide, by the middle of the fourth working season. Meanwhile other trees with two faces aggregating a total width three times as great as the narrow ones were actually yielding less than the narrow faces because of the large percentage of the trees unproductive or dead as a result of overwork.

Sharp Tools Necessary

Sharp tools are essential. Dull ones are reputed to bruise the resin duct cells, causing gum to stop running sooner than it otherwise would, although no records bearing on this point have been kept. For best results the edge or shoulder of the face should be kept even and regular. The angle of the peak should not be very sharp since a long peak has a tendency to dry out. But a moderate slope to the streak makes a cleaner cut possible, with the same effect on yield as the use of sharp hacks and pullers.

A strong opinion prevails among operators that a first or "advance" streak should be made at the time the cups are hung, following which four to six weeks should elapse before the regular weekly chipping starts. Thenceforth regularity of work is insisted upon by the best operators.

The season of work depends, of course, upon the weather. If the best trees give only small yields in the cool weather at the beginning and end of the season, the little trees will fail to do even fairly well at such times. Therefore, the wise operator will, so far as possible, start chipping in his drifts of large trees, and will continue working them later in the fall than drifts of small timber. The small trees should be handled on a short season, when the weather is most favorable for heavy gum production.

In the light of present knowledge weekly chipping seems most satisfactory. Fortnightly streaks, at half the chipping cost, netted

70 per cent as much gum as weekly work in one of the Southern Forest Experiment Station tests. However, a rough comparison of costs showed less profit for the fortnightly chipping, since chipping

FIG. 248.—By chipping lightly and with a small-sized hack and by following good woods practice the life of a turpentining operation can be extended several years

costs, in which the largest saving was made, are only a small part of the total cost. Twice-a-week chipping of virgin long-leaf pine in Mississippi some few years ago proved unsatisfactory because so many trees died during the second year as to offset the large yield of the first year.

Experience with various styles of chipping shows conclusively that it is unnecessary to take off more than half an inch of wood up the tree at each chipping; even less than this is recommended on the basis of experiments under way since 1923. When the width of streak was not over three-eighths of an inch the yield over a four-year period was greater than when it was three-quarters of an inch. The advantage of being able to work the face for a longer period is obvious.

The use of small hacks and pullers is increasing among successful operators, because this automatically limits the amount of wood cut away. With small tools a face can be worked for one or two years longer than with large tools. A No. 0 hack and a No. 1 puller are large enough except where the bark is extremely thick. An open-throated small hack is now on the market that does away with the objection, sometimes raised, that No. 0 hacks choke up badly. This modified hack has all the advantages of the regular No. 0 hack and plenty of room for chips and bark to fall through without choking.

Vary Chipping Depth

The wise operator will vary the depth of chipping according to the character of the timber. Young long-leaf pine may stand chipping up to 1 inch deep without serious injury, but the yield is not what it should be during the third and fourth years. Young slash pine, if not too crowded, will stand three-quarters of an inch without much dry face, at least in wet seasons. Old thin sap trees require very light work, and crowded young slash is very susceptible to injury from deep chipping. All timber should be chipped lightly during periods of drought. One-half inch for slash pine and five-eighths for long-leaf pine are conservative depths, if faces are to be worked over a four or five year period.

In scraping it is advisable to avoid taking off wood with the scrape, as this has a tendency to dry face the less vigorous trees.

Deep cuts for inserting tins when cups are raised often result in dry facing. The use of saw-tooth aprons is suggested, since they will hold solidly even when the cut is very shallow.

LENTHALL WYMAN.

UDDER of Dairy Cow: Its Structure and Capacity The udder of the dairy cow is one of the most important manufacturing plants. The farm value of the milk produced in one year in the United States amounts to over $2,500,000,000, which is more than one-fourth the value of all the food products in this country. Information concerning the structure and the operation of manufacturing plants turning out such an immense value of product is desirable and likely to prove of important economic value.

The udder is one of the most important parts of the dairy cow, but its internal anatomy, its capacity, and its performance are none too well understood. In much of the literature on dairy type or conformation, comments on these points are for some reason omitted. References to the subject are not by any means in close agreement.

The udder consists of two separate, elongated, flattened mammary glands, placed side by side and separated and supported largely by a heavy layer of tissue. Each gland ordinarily has two teats, the

FIG. 249.—A vertical transverse section through the rear quarters of a hard, fleshy, fibrous udder. It took more than 3 gallons of fluid to fill the secretory system of this udder

walls of which are relatively thin. Each teat has a single duct of considerable diameter occupying a large proportion of its volume.

The teat canal communicates freely above with a cavity of variable size and indefinite shape and outline, commonly known as the milk cistern, which is the terminus of a number of large ducts emptying

into and forming a part of it. In some cases, strands or layers of heavy tissue are found passing through the cistern, dividing it into communicating chambers. The ducts branch profusely and diminish in size as they penetrate the apparently more dense mammary

FIG. 250.—Horizontal transverse section of an udder (parallel to floor) showing that each of the four quarters is distinct

tissue. They serve not only to convey the milk from the secreting cells to the cistern and teat canal but also to store the product within the gland until it is removed either by the sucking of the young or by mechanical or hand milking. Figure 249 shows a vertical trans-

verse section through an udder and gives a general idea of its gross structure.

Quarters Are Distinct

Although it is generally accepted that the right and left halves of the udder are distinct, it is more or less commonly believed that some communication exists between the front and rear quarters on the same side. A study of the manner in which the mammary glands develop in the heifer from birth to maturity gives evidence that the quarters are distinct. The first traces of glandular development can be detected very soon after birth in the form of a single tiny straight tube leading from near the abdominal attachment to each teat. This tube or duct can be felt by rolling the tissue between the thumb and finger. Each one is distinct, and they are widely separated. In developing, these tubes first become enlarged near the center and then elongate vertically. The front and rear ones on the same side continue to enlarge and approach each other until they join at the base, leaving a V-shaped depression above. Gradually this depression becomes filled with tissue, and they become continuous. Since the two quarters on the same side develop from entirely distinct units, it would hardly be expected that they would communicate even though they approach and finally become attached to each other.

To illustrate the distinctness of all four quarters, an udder was removed from a mature cow after the milk had been drawn in the usual manner. A clear formalin solution was pumped through the teats into the left front and right rear quarters, while the right front and left rear quarters were filled in a similar manner with a formalin solution carrying a red dye. The udder was then frozen and sawed into horizontal transverse sections. Figure 250 shows one of these sections. The color line between the quarters is distinct, showing that none of the fluid passed from one quarter to another. No distinct septum is found between the front and rear quarters such as is found between the right and left halves, yet communication does not normally exist between them.

Judgment of the value of an udder and its capacity to function is ordinarily based upon its external size and shape (fig. 251) and upon the quality of its tissue. An udder that is hard or meaty is supposed to be deficient in capacity and in number of secreting cells. A common belief is that the capacity of the cow's udder is normally small and that the greater part of the milk obtained at any regular milking is secreted during the few minutes required for milking. A casual examination of a cross section of an udder gives the impression that the ducts are small and that the gland is largely a mass of tissue with only a limited storage capacity. Udder capacity as herein discussed is understood to mean the storage space within its secretory system.

Udder Capacity Large

Recent tests have shown the capacity of the udder to be much greater than is commonly supposed. In determining its capacity the udder is removed from the cow immediately after she is killed

Care is exercised that the tissue is not cut or injured. It is milked out completely and suspended from a frame in as nearly a normal position as possible. A formalin solution is pumped through the teats into each quarter until it is filled. The udder is then frozen and sectioned for a study of its gross and microscopic structure.

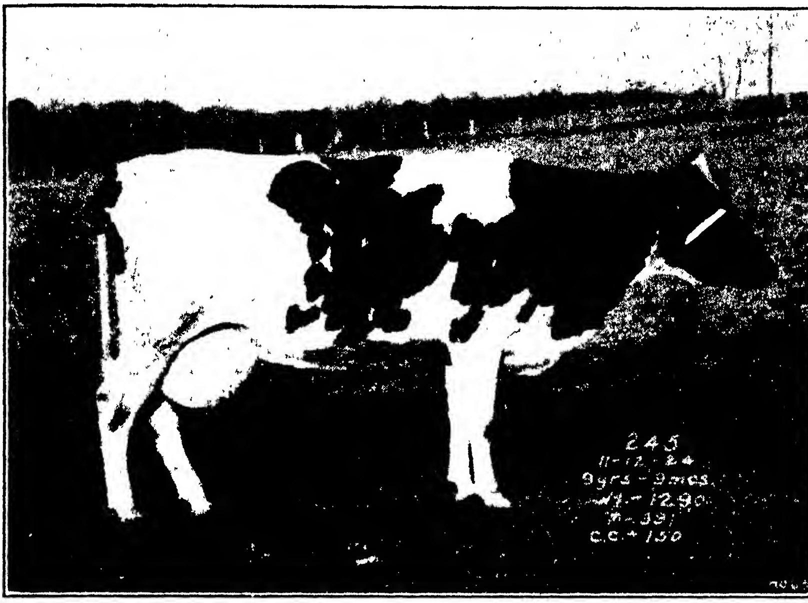

FIG. 251.—External side view of udder shown in Figure 249

Since the tissue is not cut in its removal from the cow the formalin is held within the secretory system. The quantity of formalin pumped into the udders is measured. The capacity of five udders has been determined in this manner and is shown in Table 30.

TABLE 30.—*Capacity*[1] *of the secretory system of the udder*

Number of cow	Breed	Portion of udder filled	Amount of fluid used	Capacity of secretory system	Equivalent in milk
			Cubic centimeters	*Cubic centimeters*	*Pounds*
245	Holstein	4 quarters	[2] 12,000	[2] 12,000	27.26
221	do	do	13,000	13,000	29.53
243	do	2 right quarters	4,700	9,400	21.36
459	Jersey	do	6,200	12,400	28.17
292	Holstein	do	10,200	20,400	46.35
Average					30.53

[1] For any who might be accustomed to think of udder capacity as the quantity of milk produced in two or more milkings during a period of 24 hours, it should be mentioned that capacities as given in this table refer to single fillings of the udder.
[2] Approximately.

No. 249 was a hard, fleshy, fibrous udder. It had been milking approximately six weeks, but had been infected. The quantity of formalin injected was approximately 12,000 cubic centimeters or

between 3 and 3½ gallons. No. 221 was particularly coarse and fibrous. It had been infected and was secreting only a small quantity of milk. No. 243 had been dry for 12 months and was of the meaty type but shrunken in size. No. 459 was loose and yielding and had been lactating three months following a premature parturition. No. 292 was from a heifer in her first lactation period and had been lactating 43 days.

Since the staining solution which was injected into diagonally opposite quarters did not penetrate either of the other quarters, it is obvious that the four quarters of the udder are entirely distinct. Similarly, from the fact that the secretory systems of the five udders accommodated on the average a volume of formalin equivalent in milk to more than 30 pounds, it is evident that the storage capacity of a cow's udder is greatly in excess of that generally supposed.

W. W. Swett.

UREA—A Nitrogen Fertilizer with Many Advantages Present fertilizer practices, as far as nitrogen materials are concerned, consist in using ammonium sulphate and sodium nitrate, containing, respectively, 25 and 20 per cent equivalent ammonia, either alone or in mixtures with other plant foods. The largest use of these two materials is in mixtures of rather low total plant-food content.

Several disadvantages are well recognized as attendant upon this practice. In the first place, freight charges, which are no longer an inconsiderable item in the farmer's fertilizer bill, are paid upon a large content of inert materials. Secondly, in the case of many of our present standard nitrogen carriers their use in large quantities adds to the soil an undesirable element.

Urea, which is formed by the reaction of ammonia and carbon dioxide, contains about 56 per cent ammonia. Its decomposition in the soil and utilization by the plants does not leave behind any undesirable materials. The carbon dioxide liberated after the ammonia has been used up is either absorbed by the plant or assists in the process of making phosphates available. Hence it is a highly desirable constituent in the soil.

Synthetic Ammonia to Meet Requirement

The increased demand for fertilizer nitrogen will undoubtedly be met by synthetic ammonia made from coal, air, and water. During the manufacture of ammonia by this process, large quantities of carbon dioxide are formed as a by-product. In fact, more than enough carbon dioxide is produced by the water-gas synthetic ammonia process to combine with all the ammonia to form urea. Pure carbon dioxide, such as is obtained as a by-product from this process, has a real value and has many applications in other industries, for example, in the manufacture of dairy products, and in making the new refrigerant known as "dry ice." In the future, we may expect to see the fixed-nitrogen industry supply not only these more desirable fertilizers, but also a valuable product for churning and ice-cream manufacture.

The production of urea is a difficult chemical operation and all the problems in its production have not yet been solved, even in Germany where its production has reached substantial figures. It is confidently believed, however, that in the course of time the pro-

FIG. 252.—Growth of cotton with urea. At left, urea, 1,000 pounds 8–8–4 fertilizer per acre; yield, 1,412 pounds of seed cotton. At right, no nitrogen, 1,000 pounds 0–8–4 fertilizer per acre; yield, 736 pounds of seed cotton

FIG 253.—Growth of corn with urea. At left, urea, 1,000 pounds 4–4–2 fertilizer per acre; yield, 14.1 bushels. At right, no nitrogen, 1,000 pounds 0–4–2 fertilizer per acre; yield, 24.6 bushels

duction of urea will be as easily accomplished as the manufacture of synthetic ammonia is to-day. The Department of Agriculture is endeavoring to solve these problems, to the end that the American farmers may have cheaper and better fertilizers.

H. J. KRASE

VEGETABLES and Their Varietal Stabilization Stabilization is taken here to mean any process by which it may be possible to approach more nearly that ideal condition where all vegetable seed sold would be within a certain standard of purity as to varietal type.

The term standard is not applicable to the seed business in the same sense as, for example, to the manufacture of bolts, because the same uniformity and gradation is not possible. Turnips are not shaped by machinery, and soil and climate do not affect the making of bolts. The processes of stabilizing vegetable varieties and of standardizing manufactured articles therefore have little in common. In the case of bolts, the manufacturer and the dealer find that they have only a fraction of the number of types existing before standardization took place. This is the essence of the process of standardizing manufacture. But there is confusion as to whether the stabilization of turnip varieties shall mean fewer names in the catalogues or fewer shapes and sizes of turnips growing from any one packet of seed. There is demand for both sorts of simplification, but our definition includes only the latter. Many seedsmen would be glad to cut down the number of varieties, but the gardener is more interested in having what he buys as a certain variety of turnip always turn out to be 75 or 85 or 95 per cent the thing that he has in mind when he orders.

This sort of uniformity is also distinct from the rectification of varietal names, though there are points where the two impinge. It is not so important that the Georgia planter and the Michigan planter should both call a variety of turnip by the same name as it is that they should both get that variety when they order it. There is, of course, great need of authentication of the varietal names of vegetables, but that is not stabilization.

Nature of the Problem

The possibility and the ease of the stabilization here considered are not the same with all vegetables. The ease of its accomplishment will depend on several things; first, the method of propagation. If vegetative propagation is used, the process of stabilization is easy and the percentage of purity attainable should be very high. This statement applies to potatoes, the Jerusalem artichoke, horseradish, and such other vegetables as are not propagated by seed. The stabilization of crops produced from seed, however, is very much more difficult. The work in this case is perennial and must be kept trued up continually each year. But among seed-propagated crops there is also much variation in the ease with which the varieties are kept pure. This will depend on whether the blossoms are habitually self-pollinated or cross-pollinated. Among the vegetables which are somewhat readily held true to type are peas, beans, tomatoes, and lettuce. There is some natural crossing in these plants, but it is usually slight. On the other hand, the habitually cross-pollinated plants, such as beets, sweet corn, cabbage, spinach, melons, watermelons, squashes, radishes, carrots, parsnips, and others, are very difficult to get to a pure type or to keep to that type when it is once obtained.

To all this must be added the question of warehouse mixture. Threshing machinery and warehouse handling require the closest care to prevent mixture. Peas, so far as crossing is concerned, are the safest of vegetables, but this fact is offset by the very great danger of mechanical mixing in putting the large quantities of seed through the threshing and cleaning processes.

It may be possible to weigh all these considerations justly and to express them properly in the percentage of purity required for each vegetable, but the problem will be very difficult.

Accurate Descriptions Required

As a preliminary to setting a standard it will be necessary, of course, to have accurate descriptions made of each variety to be stabilized. To return to the bolts, this preliminary step will correspond to the specifications for manufacture. It will therefore be necessary for everybody to agree on what each name shall represent. The description can hardly be too accurate, too inclusive, or the illustrative materials (such as tracings, drawings, paintings, models, and herbarium specimens) too numerous, if the work is to be rightly or usefully done. It would seem also that since the greatest demand for this sort of stabilization is from persons who make their living at growing vegetables—truckers, canners, market gardeners, and greenhouse growers—the limited number of varieties grown by them, or, better yet, a selected partial list of these varieties, should be first tried.

It is worth while to consider the causes of the condition which has led to the demand for stabilization. The present-day seed business is very complex and the sources from which any one variety of turnip can be bought are very numerous. Is the seed trade more lax than formerly, or is the demand for uniformity a new thing? Certainly the seed trade can not be accused of having neglected its business. Certainly also this demand for uniformity has become vocal and insistent only in the last three or four decades, arising with our large vegetable growing and shipping industries involving market gardener, trucker, greenhouse grower, and canner. So the thing that is new is not the lack of stabilization, which is less than at any time in the past, but the need for stabilization, which has grown more urgent with recent years. This need may be met by organization and by the pooling of buying operations in some of the minor trucking and greenhouse varieties of vegetables.

Seed of Grand Rapids lettuce, for instance, can always be bought of satisfactory purity in sufficient quantities to supply everybody. Probably also poor stocks are sometimes obtained by the careless buyer. The case is very different in that variety in which the most money is invested, and which is probably the single most important type handled by seedsmen, the Alaska pea. The seedsmen's hazard and investment are both very much greater here than with the lettuce, and there are occasional years of poor crops when there does not appear to be enough of the right sort of Alaska peas to supply the demand. Also, unfortunately, there are always considerable supplies of the wrong kinds of Alaska peas to be found, since these have legitimate uses for stock feed, forage, and the production of split peas.

To summarize, there has arisen in recent decades a demand for a degree of uniformity hitherto unknown in certain varieties of vegetables used for trucking, market gardening, canning, and greenhouse growing.

The better seedsmen have fairly well kept abreast of this demand. The consumers can not always be sufficiently informed to buy where buying is safest.

The task of fixing more definitely the types of commercial as distinguished from home varieties must be based on a full understanding of what each variety is, which means that exact varietal knowledge must precede any attempt at stabilization.

D. N. SHOEMAKER.

VEGETABLE Mart Conditions in Rapid Change The tendencies in marketing which are apparent to-day, even those which have been noticeable for several years may not prove to be permanent. The evolution of our fruit and vegetable industries has been so rapid that no one may predict with complete confidence just what will happen next. Much of our production still results from the exploitation of new regions. We can not tell whether the present methods of marketing are permanent until we know what areas are to be permanent sources of supply and upon what scale they can produce after the period of exploitation has passed.

Visitation of Mildew

From about 1910 to 1925 it was believed that the Imperial Valley of California was the great permanent muskmelon patch of the United States and that its annual contribution would be limited only by the capacity of the country to consume the "cantaloupe" of commerce. In 1926 came a sudden and devastating visitation of mildew which lowered the quality and injured the reputation of the fruit. Shipments were sharply reduced. The whole industry is jeopardized. A marked tendency away from delivered sales and in favor of selling f. o. b. had been apparent in recent seasons but to-day no one knows whether buyers will continue to buy f. o. b. products of such doubtful quality.

Granting that there can be no long-time survey of trends in so new and variable an industry as is our long-distance marketing of vegetables, certain developments seem significant. There are certain hardy green vegetables such as spinach, cabbage, lettuce, celery, and several root crops, which are not seriously injured by ordinary frosts during most of their growing period. Furthermore, these products are not ruined if exposed to temperatures slightly below freezing while in transit or during distribution. They are therefore relatively safe crops for all who grow and handle them. Successive plantings can be made during the long, mild fall and winter season of the extreme South and Southwest and an occasional loss from an unusual freeze results in higher prices for the plantings immediately following which find a relatively bare market.

Production of Safer Crops Stimulated

Marketing agencies are therefore promoting the growing of these products on a larger and larger scale. The areas of potential pro-

duction are so large that there is a generally well-sustained pressure of supply on the market. More and more these products are finding their way into chain grocery stores and are kept constantly before the housewife in fresh and abundant supply and of fairly well-standardized quality.

The demand of the chain store for uniformity of grade is reflected all the way back to the grower. The trend toward standardization of quality and fairly uniform grading of our hardier green vegetables is evident and apparently permanent. Incidentally the retailer is doing all the advertising of these products. No growers' organization is doing any extensive consumer advertising of green vegetables.

Ever since extensive vegetable production at great distances from market was first undertaken there has been a tendency on the part of the grower to decline to take all the risks. He has required the stimulus of an advance of money to persuade him to plunge heavily in so hazardous a venture. The truck crop is not a banker's security. The dealer desiring large and continuous supplies has had to provide a large part of the cash to produce the crop. There seems to have been a steady trend toward tying up large-scale truck production more and more closely with marketing agencies willing to finance the grower. Thus the first wholesale handlers of these products have, in the aggregate, acquired steadily increased financial interests in the production of the crops they sell.

The cooperative movement has, on the other hand, made but little progress among growers of highly perishable, short-season truck crops for distant shipment. Memberships are too transient; production too variable; market prices too fluctuating; management too intricate; and season of operation often too short to make probable a large measure of success.

Long-Distance Competition

A third trend is definitely discernible. The long-distance shipper of standardized products tends to compete more and more persistently with the local grower during the season for homegrown products. This results from the two trends first mentioned. Local truck crops have heretofore been sold largely ungraded or with little uniformity of grading. They are therefore not suitable for chain-store distribution, nor for other outlets which the larger dealers have developed for their graded goods from distant sources. Thus the local grower is finding much of the cash business of his home market closed to him. Many thrifty cash buyers who once went to a farmer's market now buy many fresh vegetables of entirely satisfactory quality at a chain store.

This situation has developed a fourth trend, the door-to-door sale of fresh vegetables and fruits from motor vehicles, especially in relatively small towns, so that it is the village which is becoming the local gardener's outlet for much which the city once consumed. He sells to a peddler who, with his motor truck, can cover a wide territory and serve many consumers who can not conveniently patronize the chain store nor visit a public market. In this way many local growers may escape direct competition with graded products from a distance, but the chain store invades smaller and smaller communities and the day when the local gardener must grade his

products very much as does his distant competitor seems close at hand.

Products for Gardeners Near Cities

It seems inevitable also that commercial gardeners near large cities must specialize more and more on those products which, in their season, are better than any which can come from a distance and on those which are most difficult to transport without serious loss in quality. Among these are such crops as sweet corn, garden peas, and fresh-shelled beans of all kinds.

In spite of considerable discussion and some legislation in its favor the farmer's retail market does not appear to be growing in importance. Where these markets are well patronized they furnish an outlet for many fresh, ungraded products which can not be shipped profitably for long distances. Itinerant motor-truck operators also can dispose of much ungraded produce, for the purchaser is not prejudiced by a comparison of qualities. Aside from these outlets, however, the local producer will find careful grading increasingly necessary.

WELLS A. SHERMAN.

VILLAGE Planning Contributing to Better Farm Life

Most American villages are social and trade centers for the surrounding farming community. Villages, as a rule, come into existence mainly to serve farmers. This may not be the purpose of those who start villages, but unless service to farmers is given, success is seldom attained. Villages are essential to farmers as places to trade, to market products, to procure the usual professional services, to worship, to educate children, and to satisfy social and recreational desires. A good kind of village is needed for "a good kind of life on the farm." Farmers, in their own interest, should protect and sustain the villages that serve them. Our best villages are those where the village and the farming people recognize and utilize their mutual relationship.

It is of interest to farmers that villages should be distinctive, wholesome, convenient, and efficient. In the march of industrialization and urbanization some villages are passing out of existence. Villages of a cohesive type, whose people are bound together by strong social and community life and civic pride, have the best chance to endure. Village people themselves should be interested in making their villages distinctive and serviceable, both for present use and for future expansion. Distinction and serviceability depend greatly on physical make-up. This necessitates good planning.

Some of the elements of good physical make-up of towns or villages are direct approaches, convenient and pleasing entrances and exits, broad tree-lined streets both direct and radiating, a common or village green, a civic center, open spaces, parks, and playgrounds, sanitary housing conditions, conveniently located and attractive public buildings, private dwellings and public buildings of good architecture set well back from the street and surrounded with ample lawns, and clean attractive borders. Such features make for civic efficiency, convenience, and social well-being.

In such places are found the farmer's automobiles on Saturday afternoon and evening. Here the ever increasing army of summer tourists make their stops. Such villages give promise of permanence, of becoming strong, virile, indispensable towns where the best citizenship is found, surrounded by a farming community that is satisfied with its marketing and recreational center.

Planning Problems of Cities

Present-day cities are laboriously cutting out extraneous growths, removing excrescences, and rebuilding themselves to meet modern conditions. Great tenement sections are eliminated, costly buildings torn down, century-old trees uprooted, expensive suburban tracts acquired in order to create modern housing sections, widen thoroughfares, build civic centers, install gateways, and create public parks and playgrounds. Huge sums are spent annually to excise unhealthful situations which foresight might have prevented.

Must the 18,000 American villages look forward to these painful operations at maturity? Not necessarily! Some States are tardily leading the way in preventive planning for towns and villages as witness the work of the Massachusetts Federation of Planning Boards, the Iowa Town Planning Association, and the Wisconsin State Rural Planning Committee with its local county committees, all of which include villages in their ministrations.

The same may be said of such regional associations as the Niagara Frontier Planning Association, the Regional Planning Association of the San Francisco Bay Counties, and the Westchester County Planning Commission. State and private colonizing companies are building well-planned communities as at Ojibwa, Wis., Durham and Patterson, Calif., and in Pender County, N. C.

Notable new villages recently carefully planned with a view to esthetic and physical comfort are found at Mariemont, Ohio, Longview, Wash., Pinehurst, N. C., where certain farm lands were definitely set aside, and at Palo Verde, Calif., where exceptional provisions for parks and playgrounds were made.

Many foresighted villages are initiating their own planning practices. In some places this is accomplished by large-piece reconstruction work at one time, while in other villages the planning work is continued through many years. Weston and Cohassett, Mass., have replanned their town centers by removing old structures, broadening and straightening roadways, eliminating insanitary surroundings, and providing commons and establishing notable civic centers. (Figs. 254 and 255.) Brandon and Jericho, Vt., have grouped trade or public buildings about a public park or common with radiating tree-lined streets. Leroy, Ohio, and Waverly, Pa., have established civic centers. Forrest City, N. C., and Simsbury and Salisbury, Conn., have centered their planning activities on one main street. Newport, Vt., and Ashfield, Mass., have recently completed important planning developments about lake shores.

Other recent notable planning features are stream-side improvements at Logan, Utah, Cape Girardeau, Mo., and Lewisburg, Pa.; railroad gateways at Forrest City, Ark., Harper, Kans., and Post, Tex.; trolley gateways at West Milton, Ohio, Wheaton, Ill., and

Morrison Ridge, Kans.; park developments at Geary, Okla., and Waterloo, Wis.; playgrounds at Pipestone, Minn., and Elizabethville, Pa.; waterworks adornments at Norwich, N. Y., and Morrisville, Vt.; glen and waterfall reservations at Barre, Mass.; cemetery devel-

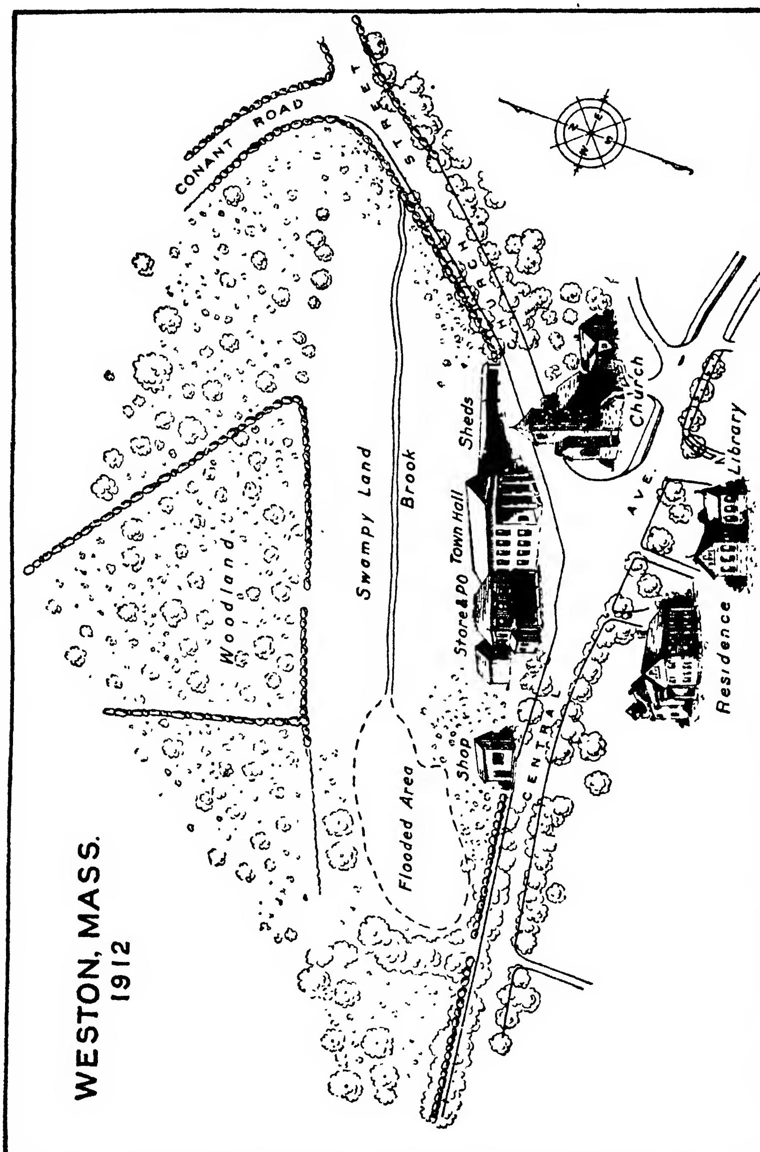

Fig. 254.—Weston, Mass., village center before replanning in 1912

opment at Bowman, Ga., Guttenberg, Iowa, and Geddes, S. Dak.; and vacant lot improvements at New Hampton, N. H., and Benwood, W. Va.

A striking recent improvement is evident in the proper location, architecture, and ground improvements of public buildings such as

schools, churches, libraries, town halls, courthouses, post offices, and community buildings.

The great sums now being spent for city planning are really for replanning and reconstruction, necessitated by earlier mistakes and

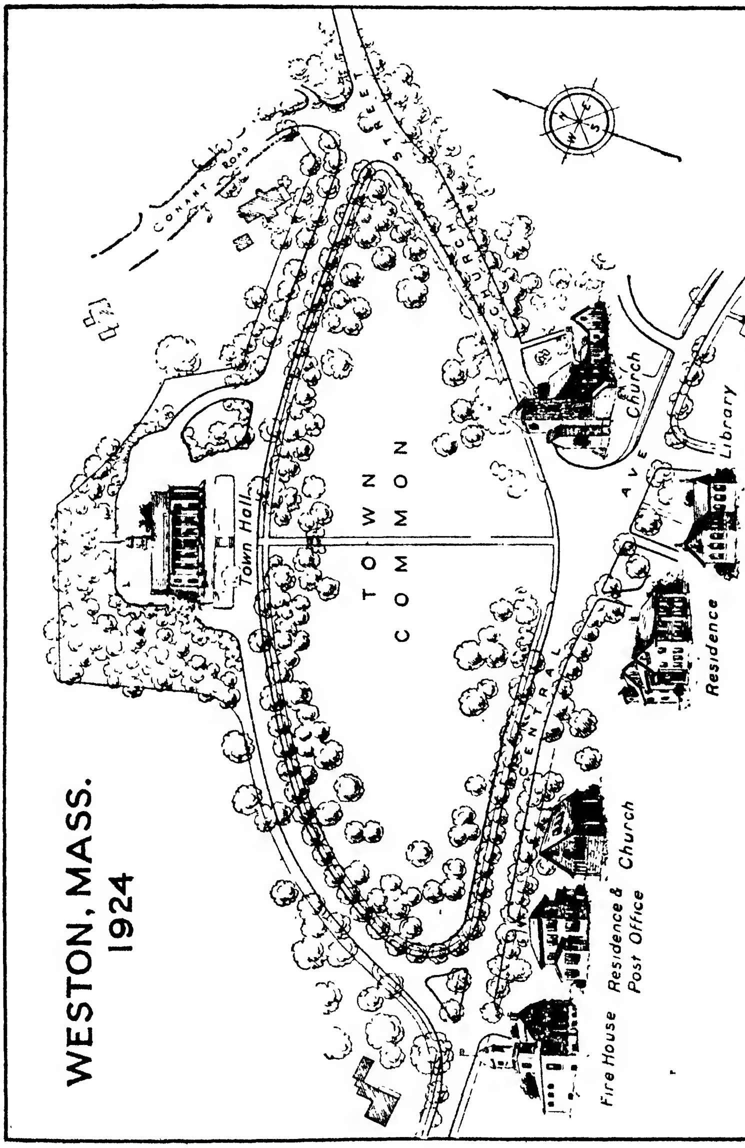

FIG. 255.—New plan of Weston, Mass., town common after replanning

haphazard growth. To plan a town is to exert careful control over its physical development as a whole. It is not a waste but a saving of money. It is made unnecessary to spend great sums in the future for reconstruction.

Village planning is in its infancy in the United States. If rightfully carried out it promises much for the economic, social, and

esthetic welfare of the 20,000,000 people who live in villages or small towns and the 30,000,000 farm people who use them.

WAYNE C. NASON.

WAGES of Farm Labor in the Last 60 Years The general trend of farm wages from 1866 to date has been upward along with prices, cost of living, and industrial wages. Farm wages were between 75 and 80 per cent of the 1910–1914 average in 1866 and 1869, dropping to less than 60 per cent, their lowest point for the past 60 years, between 1877 and 1880. From 1882 to 1893 farm wages continued at about 65 per cent, dropping to 61 per cent in 1894. Farm wages improved slowly during the remainder of the nineties, rose rapidly until 1905, and continued to rise at a less rapid rate until 1916 when, under the influence

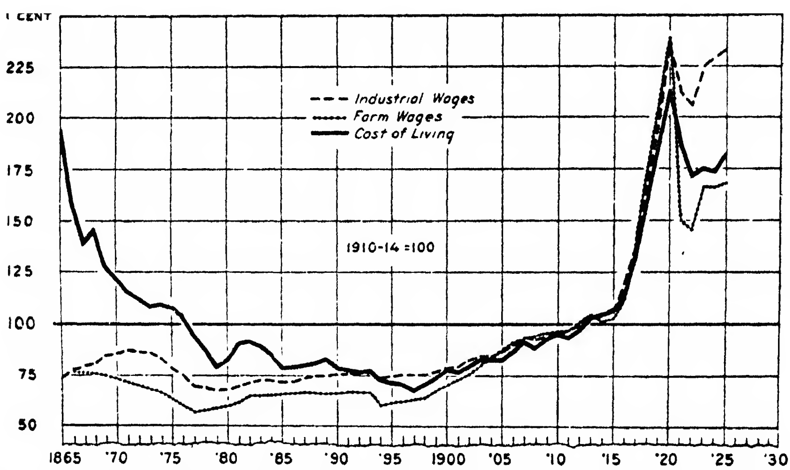

FIG. 256.—Farm wages, industrial wages, and cost of living, 1865 to 1925, inclusive

of World War conditions and postwar expansion, farm wages reached a peak in 1920 which was 230 per cent of the 1910–1914 average. Farm wages dropped to 150 per cent in 1921, and 146 per cent in 1922 during the more acute stages of the postwar deflation and depression period. They rose to about 160 to 170 per cent of the 1910–1914 average in 1923, at which level they have continued for the past several years. The general trend of farm wages from 1866 to 1925 is shown in Figure 256, together with the trends of industrial wages and of the general cost of living in cities and towns.

Farm Wages and Industrial Wages

In 1866 both farm and industrial wages stood at 78 per cent of the 1910–1914 average, while the cost of living in cities and towns was more than double that amount, or 158 per cent. Neither industrial or farm wages reflected the high-price level of Civil War days. Industrial wages advanced to about 85 per cent of the 1910–1914 average during the first few years following the Civil War, while

farm wages tended toward lower levels. Both industrial and farm wages reached the low point for the past 60 years during the late seventies. Industrial wages were not affected as much by the hard times of the nineties as were farm wages. Beginning with the late nineties farm wages began to rise more rapidly than industrial wages until about 1905 when they both continued to rise at about the same rate, reaching approximately the same peak in 1920. Both groups of wages dropped from 1920 to 1922, but farm wages dropped much farther. Farm wages during the past few years have been only about 160 to 170 per cent of the 1910–1914 average, while industrial wages have at no time been less than 200 per cent of the pre-war average and have since reached a point fully as high as the peak of 1920.

The cost of living decreased rapidly from 1865 to 1879 when it reached a low point at about the same time as both industrial and farm wages. The cost of living index was above both wage indexes until about 1890, but since 1890 it has been generally below industrial wages and except for a 10-year period from 1903 to 1913, above farm wages. The cost of living index started upward at the beginning of the World War, before wages, but did not reach as high a peak in 1920. It dropped from 1920 to 1922 and has remained slightly above farm wages, but very much below industrial wages.

Factors in the Trend of Farm Wages

It is to be expected that farm wages and industrial wages would tend to have the same general trend over a long period of years. There have always been some shifts in labor supply from city to country and back again at certain seasons of the year and from year to year. If the wage inducements were great enough, the shift would be largely in one direction. High industrial wages at the present time are attracting farm laborers from the country. Since industrial labor has become better organized it has been able to keep wages moving upward in close harmony with the cost of living, with some slight lag, early in the war, and has even been able to hold industrial wages at the high war levels after the cost of living declined.

The recovery of business in 1922 and 1923 was reflected by a substantial recovery in both farm and industrial wages in 1923. The restriction of immigration was undoubtedly a contributing factor to this rise. But farm wages have remained between 160 and 170 per cent of the 1910–1914 average while industrial wages have reached a level fully as high as that reached in 1920. Although farm and industrial wages tend to have the same trend over a long period of time and are subject to many of the same influences such as deflation, business depression and recovery and immigration restriction, another highly important factor at work is the relative level of the prices of farm products as received by farmers.

Farm wages improved relatively faster than industrial wages from the late nineties to the beginning of the war in 1914. During that period the price of farm products increased relatively more than the prices of industrial products. It is undoubtedly true at the present time that farm wages are held at a lower level than industrial wages by the much lower level of farm prices. With farm prices of corn,

cotton, and other farm products at present levels the farmer can not afford to hire much farm labor even at the present relatively low level of farm wages. On the other hand with industrial wages and earnings increasing, it is not likely that farm wages will decrease materially.

C. F. SARLE.

WAGES of Farm Hands Governed by Three Factors Farm wages appear to be influenced by three major factors: (1) Supply of farm labor, (2) cost of living, and (3) factory employment and wages.

The supply of farm laborers affects the wages they receive in very much the same way that the supply of a commodity influences its market price. An increased supply means lower wages or prices

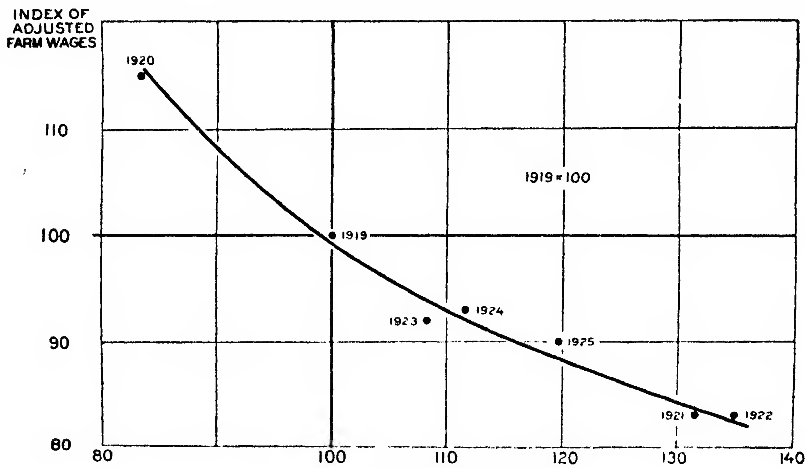

FIG. 257.—Supply of farm labor and wages adjusted for changes in cost of living. An increase in the supply of farm laborers means lower wages, and a decrease means higher wages

and a decreased supply means higher wages or prices. Since 1919, this relationship has been generally true if account is taken of the changes in the price level or cost of living.

In Figure 257 is shown a farm-labor supply and wages curve. The index of farm labor supply (measured horizontally on the figure) is derived from reports of farmer correspondents who indicate annually whether the supply and demand for farm labor in their localities are above or below normal. The index of wages is also based on reports by farmer correspondents. For use in this comparison, the reported average wages have been adjusted for changes in the cost of living in the United States and therefore represent changes in the purchasing power of farm wages. Both the supply and wage conditions of 1919 are here expressed as 100. Thus in 1921 the supply of farm labor in relation to the demand in that year was 31 per cent greater than in 1919. Wages, after allowing for the lower cost of living in the United States in 1921, consequently fell to 17 per cent from the 1919 level.

Factory employment and factory wages are both indirect factors in farm wages. During the past seven years for which data are available, increases in factory employment have been accompanied by decreases in the farm labor supply, and vice versa. Apparently when there is an active demand for labor in manufacturing industries, some farm hands are induced, probably by the prospect of higher city wages, to leave the farms, and when factory workers are laid off, some of them return to or seek employment on farms.

Factory Wages an Influence

This movement of the labor supply between farm and factory tends to cause farm wages during the year to vary somewhat with factory wages except in the months of unusually heavy demand for farm hands. Thus since 1923 farm wages and earnings of factory workers have fluctuated in the same way in each season of the year except between April and July. The heavy demand for harvest labor during the past three years has caused farm wages to go up while factory wages declined. Evidently more hands were needed on the farm than were made available for farm work by the slowing down of manufacturing activity during the summer. Between October and January farm wages have declined more rapidly than industrial wage earnings, since the demand for farm labor in January is probably at the lowest point of the year.

L. H. Bean.

WASHING Clothes a Problem in Temperatures

Laundering has been done the world over ever since fabrics have been used for personal or household purposes. The aim has always been the same—to get out all the dirt and to get back the original color or whiteness without injury to the fabric. Many methods have been tried, in all countries, with varying degrees of success, from the primitive rubbing on the stones of the river bank to the modern washing machine.

The principle of all washing consists in sending a cleansing liquid through the clothes with sufficient force to dislodge the dirt. How hot shall this cleansing fluid be? This is an important question and when answered as the result of scientific study will go a long way toward working out a standard home-laundry method. For this reason the studies being undertaken at the present time by the department are emphasizing washing temperatures.

Before choosing the proper washing temperatures, a study must be made of the properties of soap, the characteristics of the common textile fibers from which fabrics are made, the kinds of soil that get on fabrics in everyday use, and the fastness of dyes to washing.

Friction and water are not enough to extract dirt from fabrics because loose dirt is held by a film of grease. Soap is needed also because it has the power of wetting greasy surfaces and of attracting to itself the dirt and grease, leaving the fabric clean. In order to act as a detergent, or cleanser, the soap must be dissolved in water. This is one of the reasons the temperature of wash water is important. Soap will dissolve at low or high temperatures depending on the kind of fat which was used in its manufacture. The vegetable fats usually produce soaps which can be dissolved in cool

water and are so-called oleic acid or soft-oil soaps. Soaps made from animal fats, the so-called tallow soaps, generally require hot water to dissolve them. The temperature of wash water, however, does not depend alone on what will dissolve the different kinds of soap. Some of the textile fibers from which fabrics are woven are affected by water of different temperatures. Before buying the soap for laundering, therefore, it is important to know whether clothes can stand very hot water.

Fibers Chiefly Used

The fibers which are used most extensively in the manufacture of textiles may be divided into three classes: (1), The animal fibers, including silk and wool; (2), the vegetable fibers, cotton and flax; and (3), the artificial fiber, rayon.

The animal fibers belong to a group of substances known as proteins and are soluble in an alkaline solution and injured by high temperatures. Wool is a slender, wavy fiber composed of elongated cells and covered throughout its varying length of three-quarters of an inch to 8 inches with minute overlapping scales. This peculiar structure of wool causes it to become felted when rubbed, or washed in very hot water or an alkaline solution. Silk, on the other hand, does not consist of a number of small cells, but is one long round filament. If unbroken in winding off the cocoon it may be as long as 40 feet. It does not shrink like wool, but is somewhat sensitive to heat and alkaline solutions. These properties of wool and silk suggest careful handling in laundering fabrics of these fibers, use of a neutral soft, oil soap, and need for lukewarm water for suds and rinses.

The cotton fiber comes from the fruit pod of the cotton plant and is three-quarters of an inch to 3 inches long. Under the microscope it looks like a twisted ribbon. Linen is made from the flax plant and the flax fibers are longer than cotton, varying from 12 to 36 inches in length. Flax fibers look like a straight ribbon with cross markings when examined with a magnifying glass. Both cotton and flax are made of cellulose and are not hurt by boiling water or weakly alkaline solutions. More drastic treatment can be used in washing fabrics of these fibers than is possible with silks and woolens. Brisk rubbing and stirring, a tallow laundry soap, and hot water can be used to good effect on cottons and linens.

Artificial silk, which is becoming more and more popular for undergarments and, in combination with other fibers, for dress fabrics, requires a certain care in laundering. It swells and loses strength when put into water and alkaline solutions. Therefore artificial silk fabrics must be squeezed rather than rubbed to remove the soil, and a neutral soap dissolved in lukewarm water used for suds and tepid water for rinses.

Colors Cause Anxiety

A colored fabric made from any textile fiber always causes greater anxiety in washing than anything white. How it is going to come out is oftentimes a gamble. Recently, however, great steps forward have been made in dyes and dyeing, and colored fabrics have

been produced which are more likely to launder well. Still it is universally known that colored goods must be separated from white goods in laundering and treated as gently as possible while getting them clean. The general rule is to use neutral soap suds no hotter than lukewarm, followed by rinses of the same temperature, and to wash and rinse as quickly as possible. The hotter the water, the more of the dye will be stripped from the fabric by the soap suds.

The kind of soil on clothing also has to be considered in deciding on the proper temperature for washing. Excluding stains, which have to be treated aside from the regular laundry process, there are four kinds of dirt: (1) Albuminous matter, as for example, eggs, blood, or any body excretion; (2) finely divided matter, as soot and dust; (3) animal and vegetable fats; (4) machine and mineral oils.

Albumin is the only one of these which is changed by a temperature between that of an ordinary room (70° F.) and of boiling water (212° F.). At a temperature about midway between these two, albumin changes to a form which will not dissolve in water, or becomes "set" on the fabric. The water for washing is generally somewhere between room temperature and boiling. If clothes have on them perspiration or other body excretions, or bits of food containing albumin, there is danger that these may be "set" or cooked into the fabric if the water is hotter than this halfway point. Very hot water may be needed, however, to remove other kinds of dirt. If this proves true, in the study now under way, then a preliminary soaking in lukewarm water will be recommended in order to get rid of the albuminous dirt.

In studying these various points on washing temperatures, pieces of different fabrics are being soiled and then washed in small cylinder washing machines with different degrees of hot and cold water. The cleanliness of the fabrics is determined by weighing and by the use of an instrument called a photometer. The results of all these studies will be translated into a standard method for home laundering which will take out some of the guesswork and make washing possible in the easiest, quickest, and most efficient way.

A. ELIZABETH HILL.

WHEAT Breeding for Resistance to Leaf Rust

All of the important varieties of wheat now grown in the United States are susceptible to one or more of the widely distributed forms of leaf rust. As a result leaf rust is usually prevalent on all of the wheat grown where humid conditions favorable for its development prevail. The amount of damage done by this rust varies considerably from season to season and from place to place. The crop seldom is ruined entirely but sometimes severe losses occur.

The hard red winter wheats, when grown in certain of the humid sections of the country, have been more or less resistant to leaf rust. The hard wheats, however, lack adaptation to humid conditions and can not be grown profitably. Over most of this area the soft red winter and white wheats give better yields than the hard red winters, although they are more susceptible to leaf rust. The possibility thus was presented of combining the resistance of one class with the adaptation of the other classes.

Experiments were begun in 1920, designed in part to study the inheritance of resistance to leaf rust but mainly to develop a wheat adapted to the humid winter wheat area and resistant to this rust. A series of hybrids were made between several strains of the Kanred variety, a hard red winter wheat, and soft red and white wheats. In later years Malakoff and other varieties have been used as resistant parents in numerous crosses.

In the course of these investigations hybrids have been made at Arlington Experiment Farm, Rosslyn, Va.; at La Fayette, Ind., in cooperation with the Indiana Experiment Station; and at Manhattan, Kans., in cooperation with the Kansas Experiment Station. Progenies from these hybrids have been grown at the places named and also at Knoxville, Tenn., and later in South Carolina and at several points in North Carolina, in cooperation with the experiment stations of the States named, and also in other States.

Resistant Selections Tested

These investigations have now proceeded to the point where a number of selections that have shown resistance to leaf rust are being tested for adaptation and yield. In the early tests that have been made it is apparent that certain strains have been obtained that are resistant to leaf rust in the localities where they have been grown. Some of these have given good yields and thus appear to combine adaptation to these localities with rust resistance.

The breeding for resistance to leaf rust has been complicated by the fact that there are different physiologic forms of this rust which behave differently on different varieties. Twelve different physiologic forms, distinguishable by their reaction on different wheats, have been determined. With several of these forms present in any locality in proportions varying from season to season, as seems to be the case, the problem of breeding for rust resistance becomes very complex. The inheritance of resistance, as a consequence, can hardly be determined in field cultures. Despite these conditions the results obtained indicate that there is segregation for resistance and that the characteristic of low rust susceptibility has been transmitted to certain of the progeny in combination with certain other desirable characters.

Resistance is Inherited

By studying in the greenhouse progenies of these hybrids between resistant and susceptible wheats, it has been determined that resistance is definitely inherited. In the greenhouse studies separate pure cultures of physiologic forms of leaf rust were used and the plants were protected from infection by other forms. Approximately three resistant to one susceptible segregates appeared in the F_2 generation of crosses where the hard red wheat Malakoff was used as the resistant parent.

In the F_3 generation the susceptible segregates bred true, while only one out of three of the resistant bred true, the other two segregating again into three resistant and one susceptible. In crosses where Malakoff was used as the susceptible parent, a segregation of one resistant to two intermediate and one susceptible occurred. These

facts indicate that resistance in these cases is due to a single genetic factor.

In the case of crosses between two varieties, one which is susceptible to one form of leaf rust and resistant to another, and one which shows the reverse reaction to these two forms, the resistances of the two parents are independently inherited. A di-hybrid ratio in respect to reaction to these two physiologic forms of rust is obtained in the F_2. Resistance to the various physiologic forms so far tested is due, therefore, to different factors or groups of factors inherited as a unit, the different factors or groups of factors being independently inherited. These may be brought together, thus uniting in a single strain the resistance to the various physiologic forms possessed by the different varieties. It may thus be possible to develop a strain of wheat resistant to all physiologic forms of leaf rust. Experiments along this line are now under way.

C. E. LEIGHTY.

WHEATS Highly Resistant to Loose Smut Loose smut of wheat causes an estimated loss of over 10,000,000 bushels annually in the United States. It is possible to control the disease by treating the seed with hot water, but the treatment is difficult to apply and frequently reduces the stand and the yield.

Since 1922 many varieties and strains of wheat have been tested at Rosslyn, Va., and Ithaca, N. Y., for resistance to loose smut. All of the important eastern wheats and a few of the leading western wheats have been included in the tests. As a result, resistant or immune strains have been found in the following varieties: Blackhull, Dawson. Fulcaster, Fultz, Hussar, Leap, Penquite, Preston, Purplestraw, Ridit, Shepherd, Silversheaf, and Trumbull.

The list includes some of the most important and widely grown varieties, such as Fultz and Fulcaster. Fultz, Fulcaster, and Dawson generally have been reported to be susceptible to loose smut, but the pure-line selections used in these experiments proved to be highly resistant. The occurrence of resistant and otherwise desirable strains in these widely grown wheats gives encouragement to the hope of reducing the heavy annual loss caused by loose smut of wheat.

V. F. TAPKE.

WHEAT Mosaic Control Through Immune Strains The mosaic diseases of the winter cereals occur on wheat, rye, and barley and on wheat-rye hybrids. In the districts where wheat mosaic is prevalent it is very destructive to certain varieties.

The great economic and biological importance of the mosaic and other virus diseases of plants has stimulated many scientific workers to make extensive investigations of these diseases. Although the greatest interest seems to be centered around the attempt to discover the cause for these diseases, it should be emphasized that marked progress can be made in their control, even though it is not known what causes them.

The early studies on wheat mosaic indicated that the disease developed regularly from soil infestation. Further study showed that the

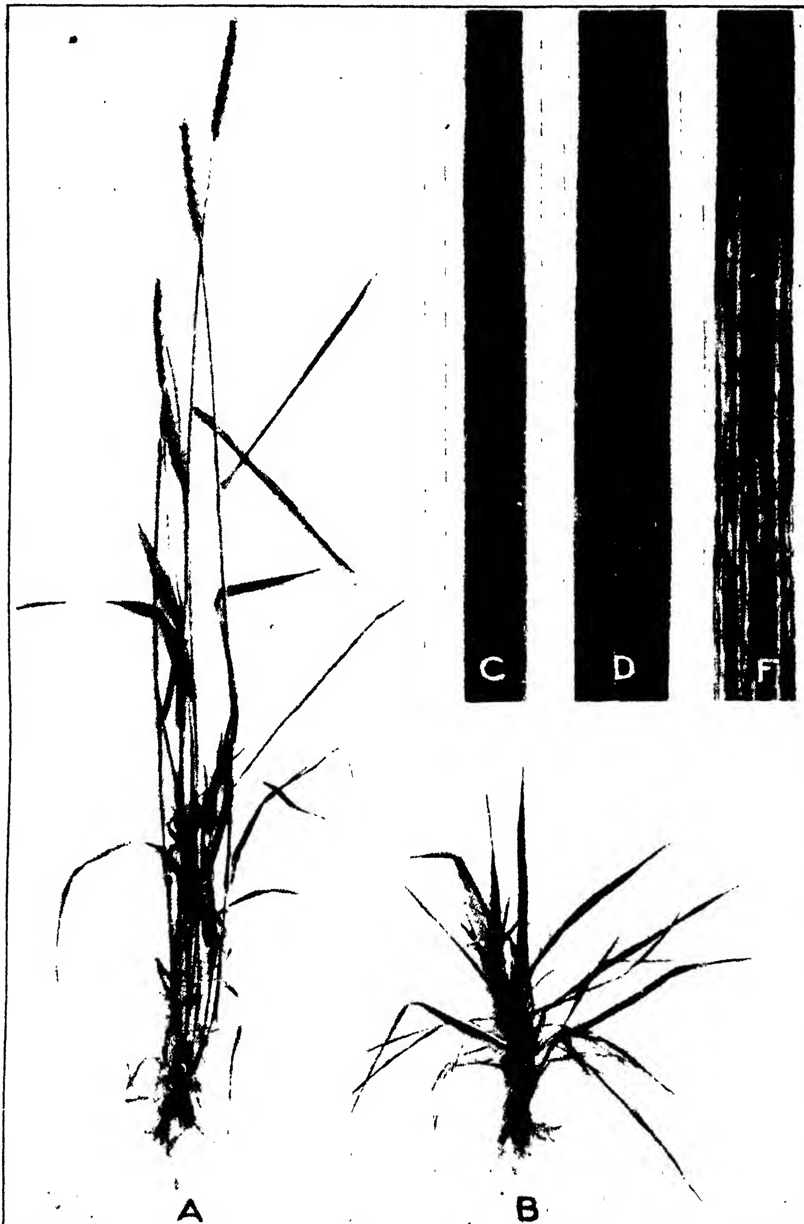

FIG. 258.—A, Healthy Harvest Queen plant; B, Harvest Queen plant showing a severe case of the rosette phase of mosaic; C, portion of a healthy leaf of wheat; D and F, portions of leaves showing mosaic mottling

virus can exist in heavy silt soils for at least seven years when winter wheat is grown every year or even at irregular intervals. This soil

relationship was so strikingly at variance with the accepted ideas relating to other mosaic diseases that wheat mosaic was thought for a time to be another type of disease.

The virus does not exist for as long a period in sandy soil as it does in the silt and clay types. This very likely is due, to a large extent, to differences in the leaching properties of the soils. It is evident, therefore, that soil type has an important bearing on its retention of a virus.

Control of Wheat Mosaic

In the study of this disease it was fortunate that the far-reaching possibilities for controlling the mosaics through selection and breeding for resistance were made strikingly evident. This was brought about by a series of favorable circumstances, the most important of which were the existence of the virus in the soil and the extreme regularity with which the disease developed in wheat grown on uniformly infested areas.

Wheat is a very favorable plant for conducting disease-resistance studies. In no other crop have there been developed so many varieties and selections and in few others is it possible to study so many individuals on a small area of ground. This combination of favorable circumstances made it possible virtually to wipe out the losses due to wheat mosaic after a single season's study of varieties. Wheat mosaic is still with us, but it now occurs primarily on varieties which are highly tolerant to the disease.

Selection studies show that resistant or immune strains may be obtained from a very susceptible variety. Harvest Queen wheat can not be grown on soil containing a great quantity of virus, yet it has been possible to select individual Harvest Queen plants which are so resistant to mosaic that no appreciable losses occur, and in some cases it appears that there is complete immunity. The principal agronomic characters of these selections seem to be essentially like those of the original type, and it therefore appears that winter wheat mosaic can be held completely in check without sacrificing a valuable variety.

H. H. McKinney.

WHEAT Reports on Production and Holdings More complete and timely reports upon the domestic supply of wheat and its movement into consumption are now becoming available through a program put into operation by the Departments of Agriculture and Commerce. Under this program the Bureau of Agricultural Economics is collecting weekly reports of wheat in terminal markets, and quarterly reports of stocks on farms and in country mills and elevators, while the Bureau of the Census is collecting quarterly reports of wheat in merchant mills. These various reports have been adjusted to eliminate duplication, and taken together present a picture of the Nation's wheat supplies at three-month intervals.

Heretofore the Department of Agriculture published as of March 1 and July 1 estimates of wheat on farms and in country mills and elevators based upon questionnaires to crop reporters and elevator

and mill operators. The reporters were asked to report on the percentage of the preceding year's crop which, in their judgment, was on hand on the given date. The new series of quarterly reports of stocks on farms will be based upon reports of actual production and actual holdings in bushels. Experience has demonstrated that such sample data give somewhat more accurate results. In like manner, operators of country mills and elevators are asked to report actual holdings on each date. From this sample the quántity held by all such establishments will be estimated.

Data Heretofore Unofficial

Information on stocks in terminal markets has heretofore been gathered only by unofficial agencies. Two of the most commonly used reports of this character were those of the Chicago Board of Trade and Bradstreet's. The figure issued by the Chicago Board of Trade relates to 22 markets and does not include a number of markets, particularly in the Southwest, which have more recently become important, nor any markets in the Mountain or Pacific Coast States. The figure issued by Bradstreet's relates to over 50 markets, some of which appear to represent mill holdings, but does not include a number of markets which have recently become important.

The new series of reports on stocks at terminal points are designed to cover the holdings in about 42 markets in the following classifications:

1. In all public elevators.
2. In all private elevators or warehouses whose owners or operators are engaged in handling or storing grain in interstate commerce, except—
   (*a*) When the storage capacity of such elevator or warehouse is less than 25,000 bushels.
   (*b*) When stocks are for local merchandizing only.
   (*c*) When stocks are exclusively for local consumption by mills, crushers, or malt houses and are not expected to be offered again as grain in the markets.
3. All stocks afloat in boats or barges in lake, river, canal or seaboard ports of the United States which have not been cleared for export or shipment to another port.
4. Canadian grain in bond in these designated United States ports or markets.
5. United States grain in Canadian ports or markets.

Mill Stocks Reports

Reports on stocks owned by merchant mills of 5,000-barrel capacity have been collected by the Bureau of Census beginning with June 30, 1925. Published reports show the stocks owned by mills which produced about 87 per cent of the flour production reported by merchant mills in 1923. Of the remaining merchant mills, many do not fall in the 5,000-barrel class, and are not carried on the current census lists. These smaller merchant mills are included in the Department of Agriculture country mill and elevator report. In order to eliminate duplication with Department of Agriculture reports the Census Bureau is now reporting stocks held at the mills

separately from stocks owned but held elsewhere. This item of stocks held at mills supplements the Department of Agriculture items.

This joint arrangement of reports on wheat stocks does not include wheat in transit, either by rail or boat, nor in the small number of 5,000-barrel mills on the present census list which fail to report to that bureau. This last quantity, however, is small and an allowance can be made on the basis of holdings of those mills which do report.

The Department of Agriculture estimates of stocks on farms and in country mills and elevators on July 1 relate only to old wheat, while the reports of stocks in terminal markets and mills may include some new wheat.

Joseph A. Becker.
H. S. Irwin.

WHEAT Varieties for the Western United States

Several new wheat varieties, introduced or developed through breeding by the United States Department of Agriculture in cooperation with State experiment stations, have been distributed in the Western States. Some of these already have achieved commercial importance and others may soon. The more important ones are described and discussed briefly under the commercial classes to which they belong.

Hard Red Spring

The Kota variety was introduced from Russia and developed concurrently by the United States Department of Agriculture and the North Dakota Agricultural Experiment Station. It is a bearded, white-glumed variety which is resistant to black stem rust. It also is fairly resistant to drought and outyields Marquis in North Dakota and adjacent portions of neighboring States where it now occupies about 1,000,000 acres.

Reliance is a spring variety produced from a Marquis-Kanred cross in cooperative experiments between the Department of Agriculture and the Oregon, Montana, North Dakota, and Minnesota experiment stations. It is a bearded, white-glumed variety, maturing about one day later than Marquis. It is a vigorous, frost-resistant, and high-yielding variety. While it has the resistance of Kanred to stem rust it is not as resistant as Kota. Small samples of seed were first distributed for commercial growing from the Northern Great Plains Field Station, Mandan, N. Dak., in the spring of 1926. It should be best adapted to the western portions of the Dakotas and in Montana.

Durum

Nodak is a pure-line selection from Kubanka developed at the Dickinson substation, Dickinson, N. Dak., in cooperative experiments between the United States Department of Agriculture and the North Dakota Experiment Station. It is similar to Kubanka except for being more resistant to stem rust and a higher yielder. Seed was first distributed for commercial growing from the Dickinson substation in 1923, and it is estimated that about 5,000 acres were grown in

1926. It appears best adapted to central North Dakota where stem rust is prevalent.

Mondak is a different selection from Kubanka but developed similarly. Mondak is not resistant to stem rust but yields best in Montana and in western North Dakota where stem rust does not occur. Mondak differs from Kubanka and Nodak only in being slightly later and taller, and having better quality of grain for the manufacture of macaroni. Seed was first distributed from the Dickinson substation in 1923 and from the Judith Basin substation, Moccasin, Mont., in 1926.

Akrona is a selection from Arnautka developed at the Akron Field Station, Akron, Colo., by the United States Department of Agriculture. It is an early, high-yielding amber durum and of excellent quality for the manufacture of macaroni. Seed was first distributed from the Akron Field Station, Akron, Colo., in 1925. It appears best adapted to northeastern Colorado and adjacent sections of neighboring States.

Hard Red Winter

Karmont is a hardy, high-yielding selection of Kharkof developed at the Judith Basin substation in cooperative experiments between the United States Department of Agriculture and the Montana Agricultural Experiment Station. It is slightly hardier than Kharkof and yields best in the higher and drier sections of Montana. Seed was first distributed from the Moccasin substation in 1922, and it is estimated that about 350,000 acres were grown in 1926.

Newturk is an awnless hard red winter wheat developed from a Newton-Turkey cross in cooperative experiments between the United States Department of Agriculture and the Montana Agricultural Experiment Station at the Judith Basin substation. It is as hardy and as high yielding as Kharkof or Karmont in Montana, and of equal quality. Seed was first distributed for commercial growing in the fall of 1926.

Regal is a smut-resistant selection of Turkey developed in cooperative experiments between the United States Department of Agriculture and the Oregon Agricultural Experiment Station at the Sherman County branch station, Moro, Oreg. The Regal variety may be distinguished from other hard red winter wheats by its purple stems. Seed of the Regal was first distributed from the Moro Station in the fall of 1926.

White

Federation was introduced into the United States in 1914 by the United States Department of Agriculture. It originated from a cross made by William Farrer, of New South Wales, Australia, and became the leading wheat variety of Australia. After being tested in the Pacific Coast States for several years, it was distributed to farmers in Oregon in the spring of 1920 from the Sherman County substation, and later in Idaho from the Aberdeen Field Station, Aberdeen, Idaho. About 450,000 acres of Federation were grown in 1925. It is an awnless, brown-glumed, soft-kerneled spring wheat, but is grown from fall seeding in mild climates. It is especially well adapted for growing under irrigation and on rich heavy soils.

Hard Federation was selected from Federation about 1908 by J. T. Pridham, at the Cowra Experiment Station, in New South Wales, Australia. It was introduced by the Department of Agriculture in 1915 and was first distributed in 1920 to farmers of Oregon and California from experiment stations at Moro, Oreg., and Chico, Calif. It is estimated that about 100,000 acres of Hard Federation were grown in 1925. It is a short, early, awnless, brown-glumed, hard white wheat, best adapted to the higher and drier sections of California, Oregon, and Montana.

Onas was introduced by the United States Department of Agriculture from Tulsa, Saddleworth, South Australia. It was developed through hybridization by F. Coleman, Federation being one parent. The value of this wheat for California conditions was determined in cooperative experiments by the department and the California Agricultural Experiment Station. Seed was distributed from the Davis Experiment Station, Davis, Calif., in 1923. It is a high-yielding, awnless, white-glumed, spring variety, best adapted to the low-lying good wheat lands of California.

Value of the New Wheats

Of the new varieties listed above five already have proved extremely valuable to wheat-growing farmers. These are Kota, Federation, Hard Federation, Karmont, and Nodak. Their total estimated area in 1926 was 1,855,000 acres, and the total estimated increase in value from growing them was $5,525,000.

J. Allen Clark.

Wheat Varieties Resistant to Stinking Smut

For more than 2,000 years stinking smut or bunt has been one of the worst fungous parasites of the wheat plant. A hundred years ago the practice of treating the seed with blue vitriol was in general use in regions where outbreaks of the disease were common.

In the Pacific Coast States, owing to soil infection by wind-borne spores scattered during the harvest season, satisfactory control could not be obtained by seed treatment. Infection from this source was limited to winter wheat, for these wind-borne spores perish during the winter season and cease to be a menace to wheat sown in the spring. It was necessary, therefore, to try other means of control of stinking smut in winter wheat. The most hopeful solution of the problem seemed to be to find or develop resistant varieties. Accordingly, since 1913, when the nature of field infection was first demonstrated, thousands of varieties and hybrid selections have been tested for resistance at the experiment stations in Washington, Oregon, and California. The methods used have been similar at all stations. The seed is blackened with smut spores and sown at the time infection is most likely to occur. At harvest time the susceptibility is measured in terms of percentage of bunted heads.

Most of the common bread wheats have been found to be susceptible, producing from 25 to 100 per cent of bunted heads under such conditions. A very few varieties have proved to be highly resistant, producing less than 10 per cent of smut. In fact, three strains, White Odessa, Martin, and Hussar, have been smut-free in most

tests at the various experiment stations, although they are susceptible to a specialized strain of stinking smut found in Germany.

Hundreds of hybrid selections that are smut-free in the third and later generations have been developed by the experiment stations dur-

FIG. 259.—Ridit wheat and parents, Florence on the left and Turkey on the right. Ridit is a recent development of the Washington State Agricultural Experiment Station. It is more resistant to stinking smut than either parent, and may be sown without seed treatment without danger of a smutty crop

ing recent years. Evidently there are several factors, cumulative in effect, which contribute to the resistance of these wheats, for the hybrids are often more resistant than either parent. One such hybrid, from a cross between Turkey and Florence, has been distributed in Washington to more than 100 farmers, who find that it may be

sown safely without seed treatment. Altogether, about 12,000 acres of Ridit (fig. 259), as the new wheat is called, were harvested in 1926,

FIG. 260.—Albit wheat and parents, Hybrid 128 on the left and White Odessa on the right. Albit has the club head and stiff straw of Hybrid 128 combined with the immunity from stinking smut possessed by White Odessa

Another immune hybrid named Albit (fig. 260), resulting from a cross between White Odessa and Hybrid 128, has outyielded all the old commercial varieties during the past three years at the Washington station. In the seventh generation from the original cross it is

being tested further by other stations of the Pacific coast, as well as by cooperating farmers in the winter-wheat sections of southeastern Washington and adjacent Idaho.

More than half of the wheat raised in the Pacific Coast States belongs to the white wheat class, and the remainder to the red groups. The introduction of Ridit, which is a hard red wheat, followed within three years by Albit, which belongs to the soft white type, is fortunate for a large increase of either class, by supplanting of the other, might entail serious marketing difficulties.

As the mode of inheritance of resistance to stinking smut has now been worked out and abundant immune material is available for breeding purposes, highly resistant varieties which will meet the climatic and market demands of the farmers should be available in a comparatively few years.

E. F. Gaines.

WINTER Peas in the Atlantic and Gulf Plains The Gray Winter field pea obtained from France by the United States Department of Agriculture in 1898 and the Austrian Winter field pea purchased from a New York importer of seeds in 1922 are very similar if not identical varieties judging from their behavior in the field. They belong to that group of peas which have colored flowers and dark-colored seeds, usually classified by botanists as *Pisum arvense*. The winter pea, as the name indicates, is able to endure lower temperatures than the ordinary varieties of field pea. In regions where the winters are mild it can be sown in the fall, and although the growth is slow during the winter months it will cover the ground and be ready to cut for hay or plow under as green manure in April or May, depending on the latitude and character of the season.

The winter pea has survived with very little injury temperatures of −3° F. at Washington, D. C., and −8° F. at Corvallis, Oreg., where an 8-inch snowfall afforded some protection, although the ground was frozen to a depth of 12 inches under the snow. Periods of alternate freezing and thawing are much more destructive than steady cold. Such weather during the winter and early spring has resulted in a high percentage of winterkilling in Virginia in some years.

The winter pea has been found well adapted to climatic conditions in the coastal plains of the South Atlantic and Gulf States. In this region the soils as a general rule need humus very badly. All summer-growing crops are benefited by turning under vegetable matter, and if this can be grown during the fall, winter, and early spring months, its production does not interfere with the regular crop season. In pecan orchards also some green manure crop which will allow for summer cultivation of the orchards is desirable, as the addition of humus to the soil helps to control the rosette disease.

Good Substitute for Hairy Vetch

The chief winter-growing legume available for this use in the Southeastern States is hairy vetch. Seed of hairy vetch is often difficult to obtain in sufficient quantities and is sometimes rather

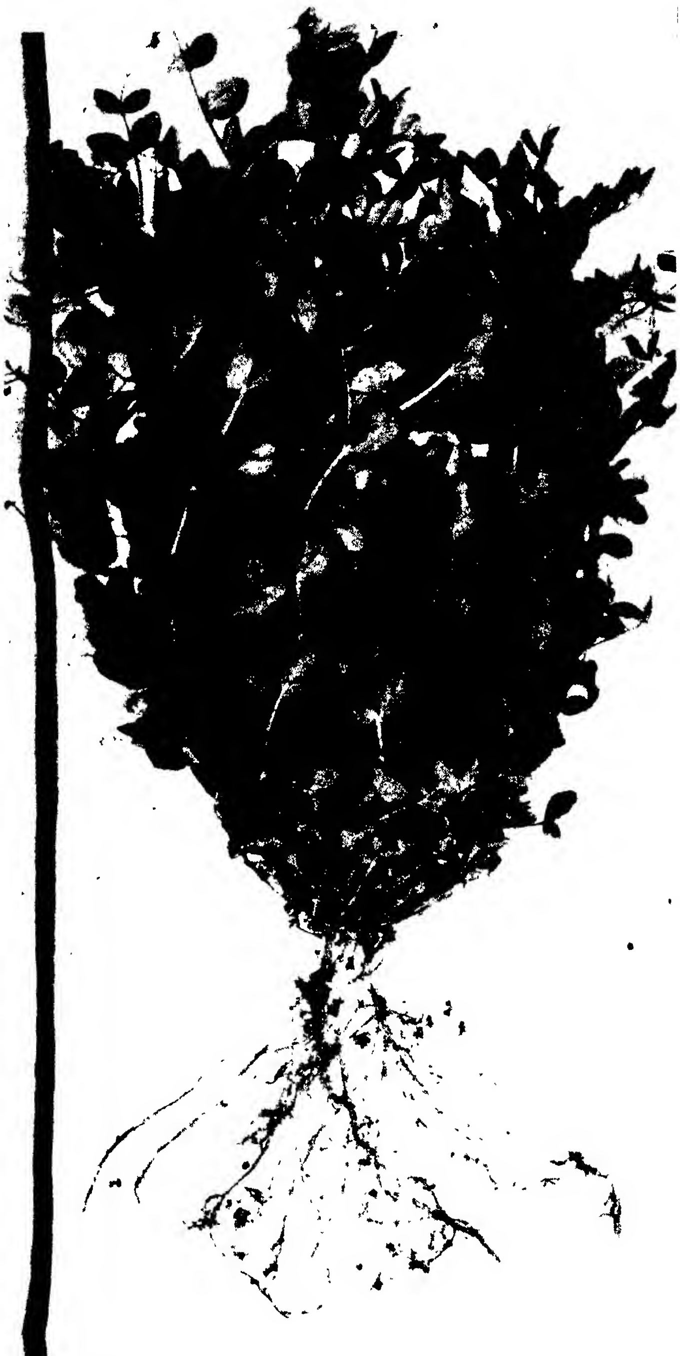

FIG. 261.—Two plants of the Austrian Winter pea and about half grown. Note the heavy stooling habit and the numerous nodules on the roots

expensive. It is desirable to have more than one crop that can be used as a winter green manure in any region, and the winter pea lends itself to this use in the Atlantic and Gulf coastal plains. Winter peas fit into the rotations fully as well as hairy vetch and make heavier yields of green matter. In the South they are fully as winter hardy also and the pea seed can be produced in the United States in almost any quantity when a steady demand for it has once been established.

The best time to sow the winter pea is between September 15 and October 15. A light seeding of rye or winter oats in mixture with the peas serves to hold them erect and by keeping them off the ground lessens their injury by disease and makes them very much easier to harvest for hay. They are seeded at the rate of 30 to 50 pounds per acre and inoculation is absolutely necessary for their successful production in the coastal plains. It has been found that they may be pastured for several months in the early spring, and if

FIG. 262.—A field of Austrian Winter peas and rye in mixture on the Arlington Experiment Farm, near Washington, D. C. Yield, green weight, 17,850 pounds per acre

the animals are removed by April 15 or May 1 there will be considerable growth left to plow under the latter part of May.

An early hay crop may be obtained by sowing mixtures of winter peas and rye or peas and oats in the fall. Yields under favorable conditions often exceed 3 tons per acre, and the feeding value and palatability of the hay is very high. Ordinarily this mixture is ready to cut for hay about May 15. It should not be allowed to stand much beyond the early pod stage of maturity, otherwise it is likely to be injured by diseases and insects.

H. N. VINALL.

WOLVES, Coyotes Take Big Toll From Stockmen For years wolves and coyotes have been destroying western livestock and game, the losses running into millions of dollars annually. They also have been a constant menace to both domestic animals and man as carriers of rabies and other communicable diseases and parasites. A day of reckoning

came. Stockmen and State officials appealed to Congress for assistance, as the animals became more destructive and their damage intolerable, in spite of local attempts to combat them. In 1915 the task was assigned to the Biological Survey of organizing and leading operations to reduce the losses inflicted by predatory wild animals.

Gradually the movement for organized control, instead of sporadic killings, gained headway, and added impetus was given it by the spread of rabies by coyotes. From 1916 to 1919 great outbreaks of this disease spread terror through the danger to human life and livestock in all States west of the Rockies. Cooperation of departments of State Governments and of stockmen's associations was enlisted by the Biological Survey and great areas of governmental and private lands were covered in an orderly way. Funds contributed annually

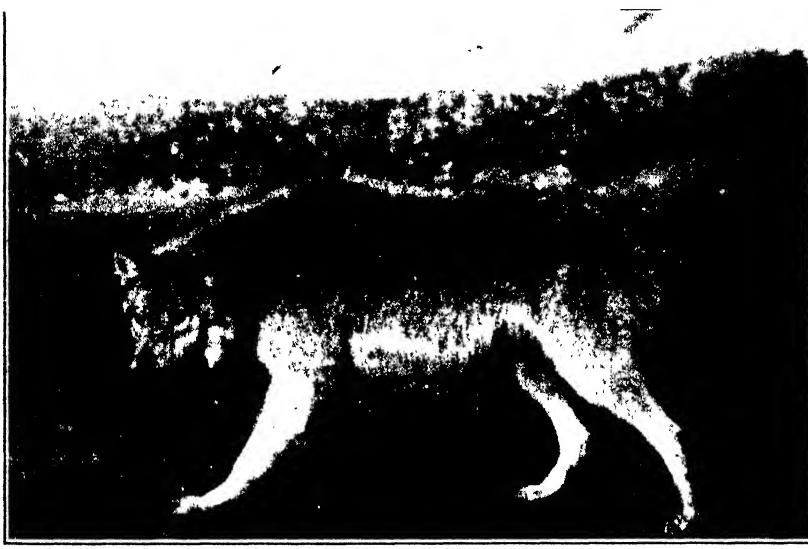

FIG. 263.—Lobo or timber wolf. These swift, powerful animals originally fed largely on buffalo, elk, and deer, but found domestic stock more to their liking and easier to kill. Losses grew so serious that it became necessary to organize a systematic campaign to clear them from livestock-producing areas

over an 11-year period by cooperating organizations in 14 States have increased from $8,931 in the first year to $375,000 in 1925–26.

Stockmen have received demonstrations in up-to-date methods of trapping, hunting, and poisoning. Poisoning campaigns, based on a wide knowledge of conditions and improved by investigational work, are the chief reliance for destroying most of the coyotes and many of the larger wolves, and follow-up work of persistent trapping and poisoning gets individual adult survivors. Concentrating operations about lambing grounds and on pasture ranges to kill off the most destructive breeding animals has afforded real protection to livestock by cutting down the increase at the source.

Large gray, or lobo, wolves have been almost cleared from livestock ranges, and instead of occurring in large numbers and pulling down cattle and other valuable stock and game as formerly, only a few scattered individuals are now at large. When their presence is reported on the range they are promptly taken by skilled men trained

in this service. A border patrol also is maintained to prevent Mexican wolves from invading southwestern ranges. During the fiscal year 1926 the destruction of 202 gray and red wolves brought the total taken in the cooperative campaigns to 6,032.

Coyote Control More Difficult

Coyotes are more difficult to control, because of their enormous numbers and rapid reproduction, their wide distribution and aggressiveness in invading new territory, and their ability to obtain food and to survive in closely settled country. Hundreds of thousands

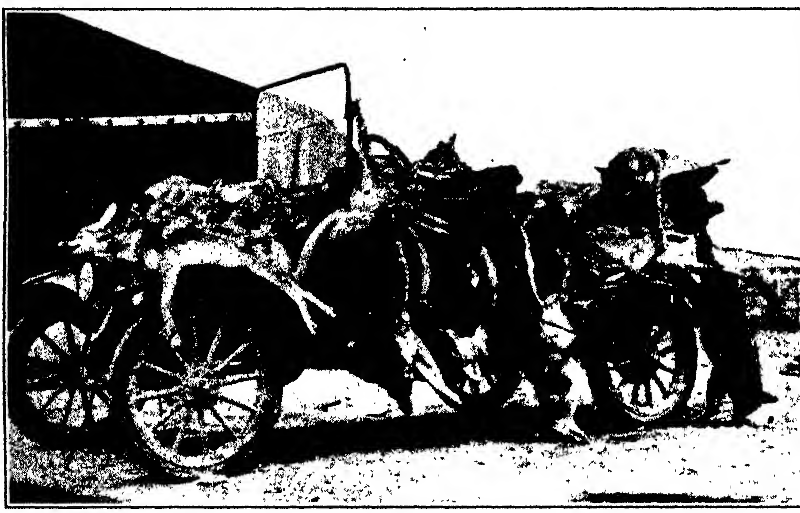

FIG. 264.—Coyotes pay the price. Countless in numbers, coyotes turned to sheep, calves, pigs, and poultry as an easily obtained food supply. The enormous losses inflicted upon stockmen and farmers made it necessary to apply vigorous, carefully planned measures for their control

have been killed, however, in the organized onslaughts, and over great areas stockmen now report either no losses or a small fraction of those previously suffered. This means better lamb crops, lower production costs, and more animals for market, conditions favorable to both producer and consumer.

The fight against wolves and coyotes will be long and arduous, but it is winning. Concerted action now eliminates major losses in two or three years' time on ordinary ranges, reduces the stock killers to occasional stragglers or invaders from neighboring territory, and under Federal leadership is steadily cutting down the possibility of reinfestation.

W. B. BELL.

WOOD Lots Too Valuable for Pasture Use Keep the cattle, horses, hogs, and sheep out of the farm woods in the central hardwood region, and timber will grow there just as thriftily as it ever did. If stock are not kept out the timber in the smaller farm woods appears to be doomed to slow but sure extinction.

Livestock eat and break down the young growth, bend it, strip it of bark, and tramp it out. Also by tramping the soil around the roots of older trees they pack it so tightly that air and water are excluded from the roots, and the trees gradually die. Hogs eat the seeds of oak and beech and thus interfere with the establishment of seedlings. Heavily pastured woods are easily recognized; they are almost or entirely devoid of bushy undergrowth, a sod of grass has begun to creep in, and the old trees are beginning to die in the tops.

Using the wood lot for pasture is an expensive way to raise livestock. The value of the forage grazed in a year from a woods that is at all dense is generally less than the value of the wood added in a year in a well-managed wood lot. A year's forage production is estimated to be worth from 25 cents to $1.25 an acre. In the same time a well-managed wood lot will add from one-half to 1 cord of wood. In addition there is the convenience of having a near-at-hand supply of the cordwood, poles, posts, and lumber which are constantly needed on every farm.

Livestock undoubtedly benefit from the shelter afforded by woods. Two or three acres, however, will ordinarily give them all the shelter they need; the remainder of the woods had better be fenced off to grow a wood crop.

A wood lot, like a herd of cattle, will develop in quantity, quality, and value if given common-sense treatment. If the owner of cattle were continually to sell off or kill for meat the best individuals in the herd, he would in time have on his hands only scrub animals. The farm wood lot responds in just the same way. If the best trees, such as ash, yellow poplar, black walnut, red gum, hickory, and red and white oak, are the only ones removed from the wood lot, and the inferior beech, black oak, elm, soft maple, and black gum and similar trees are left in possession of the ground, the result is bound to be scrub woods.

Eliminating Poorer Trees

Do not sell to prospective buyers all the choice trees in the woods unless it is possible to cut out at the same time the poorer species. In cutting cordwood for home use or sale, take out the scrubby, limby, and less valuable trees, thus making the cuttings pay double by giving the valuable timber more space to grow.

Fires must be kept out of the farm woods. They kill back to the ground young trees in the brush stage or even those up to 4 or 6 inches in diameter; they burn into the larger trees at the butt, so that the value of the butt log is greatly reduced, either because of the fire scar or because rot or insects enter through the fire-caused wound. Sometimes this wound becomes so deep that the tree is broken off by the wind. In addition, fires destroy the fallen leaves, small twigs, and the partly decayed vegetable matter of the soil (the natural manure) and thus greatly impair the soil fertility.

A farm woods that has become badly run down through mistreatment, or an old field that has played out to such an extent that it will no longer grow a good field crop, can be planted to forest trees at the rate of about 1,000 to the acre. Ordinarily the softwoods, such as pine and spruce, do better on such land than the hardwoods, like oak, ash, and gum. Before selecting the kind of trees to plant, the owner should find out what others in the region have done or should

ask the advice of the State forester. In Wisconsin, Michigan, Ohio, Indiana, Kansas, Kentucky, Iowa, Nebraska, Missouri, and Okla-

FIG. 265.—A well-managed second-growth forest uninjured by grazing animals, with plenty of reproduction and growing rapidly

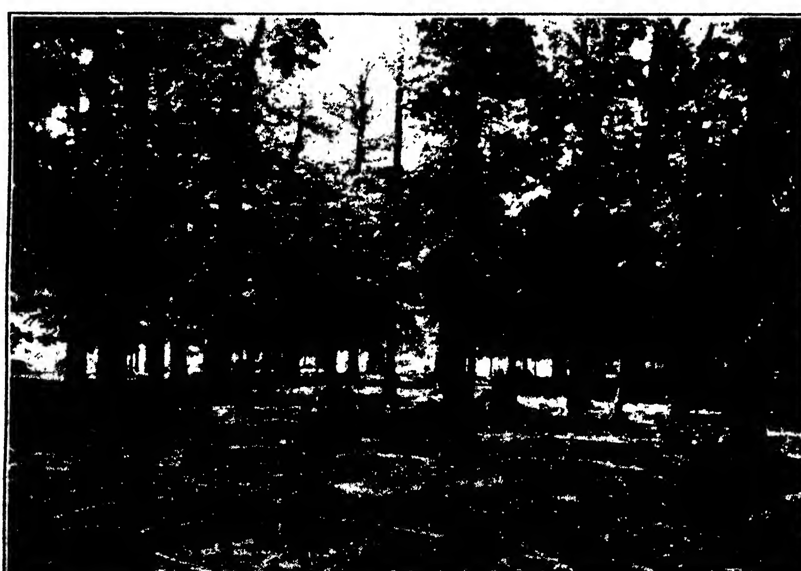

FIG. 266.—A forest in which grazing by cattle and hogs has prevented reproduction and has caused serious injury to the trees through exposure of the roots

homa, to mention only the States of the central hardwood region, small trees for forest planting can be obtained from State nurseries at a very reasonable price, on application to the State forester.

Having brought his timber to merchantable size, the farmer who wants to get the best return for his good management will do well to consult the articles in this volume on measuring and marketing timber. Instead of selling hurriedly when an offer is made, he should make sure that he is in position to make a good sale; that he knows how much timber he has and approximately what it is worth, just as he would if he were selling hogs. Consult the State forester. It is one of his functions to assist farm woods owners in estimating and marketing timber. Timber has an advantage over other farm crops in that it does not have to be sold until the market is favorable.

C. R. TILLOTSON.

WOOD Lots in Northeast Pay Well for Care Most of the wood lots in the Northeast are in the condition of an untended garden; and yet growing timber needs to be kept "weeded" quite as much as any other crop. The forest products which the wood lot yields constitute one of the most important and profitable farm crops in this region.

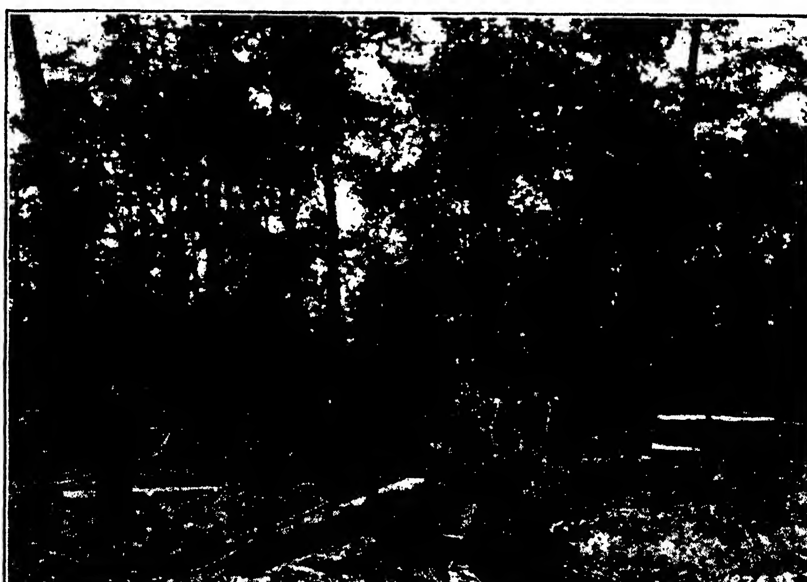

FIG. 267.—A hardwood forest in southern New England after an improvement cutting which removed the defective, poorly formed, and mature trees. Ample space is left for the growth and development of the younger, thrifty, well-formed trees. The product of the cutting was utilized for railroad ties and charcoal

As a rule, mixed pine and hardwoods produce higher quality of material, keep the soil in better condition, and are less liable to injury from insects and disease than hardwoods alone. Where pine or mixed pine and hardwoods have been harvested, the hardwoods in the new stand are apt to suppress and kill out the slower-growing pines. The less desirable hardwoods should be cut back when the pine is 3 or 4 feet in height. If later the hardwoods again begin to overtop the pines seriously, this operation must be repeated. Not only pine

should be favored in this way, but also the better hardwoods, such as ash, oak, hickory, basswood, and in some cases yellow and paper birch and sugar maple.

In older stands, where the trees appear to be crowded, the "wolf" trees, undesirable species, and all trees that are not growing well or are hindering the growth of more thrifty trees should be cut out. Experiments in New Hampshire show that 1 cord of thinnings may be removed each year from an acre of well-stocked white pine between 30 and 50 years of age with considerable advantage in the growth and quality of the remaining trees.

The way in which mature timber is cut makes a great difference in the future of the wood lot. Where the woods are even-aged their make-up should determine the method of cutting. If hardwoods prevail, clear cutting of all merchantable trees is usually satisfactory. Where pine enters considerably into the make-up of the stand, a partial cutting, removing 50 to 60 per cent of the crown canopy, is preferable. The remainder of the stand can be cut clean 4 to 6 years later, when the ground will ordinarily be amply stocked with seedlings.

Partial Cutting Sometimes Needed

Where the trees vary considerably in age and size, partial cutting should be the rule, taking out first the largest trees, and those poorly formed, defective, and of little local value. This gives ample room for younger, thrifty, well-formed trees to put on all the wood they can.

At all times the wood lot should be protected from fire. Even light surface fires will kill small trees, decrease the fertility of the soil, and injure the larger trees. Also, all currant and gooseberry bushes, both cutivated and wild, should be pulled up anywhere within 900 feet of where white pine is to grow. Continued production of white pine is impossible unless these bushes, which are hosts for the white pine blister rust, are eradicated.

Where tree planting is desirable, white pine, red pine, and Norway spruce seedlings will do well under most conditions in this region. White pine can often be planted profitably under gray birch, provided the birch is completely removed when the pine is about 4 feet high.

Wood-lot owners in the Northeast who have tried it know that protection of the wood lot from fire, insects, and disease, careful methods of cutting, intelligent thinning of young stands, and planting of waste lands, pay dividends out of all proportion to the cost of such measures.

SAMUEL T. DANA.

WOOD Lots in the Piedmont Region a Profit Source Governor Angus McLean, of North Carolina, in a recent address said: "I do not expect to see agriculture a generally profitable industry in eastern North Carolina until the farmers supplement their agricultural production with crops of valuable timber for their uncultivated land." What is true for eastern North Carolina is generally true for the whole eastern Piedmont and coastal plain region. Farm woods can and

should grow valuable crops, producing an income from the poorer or less easily tilled soils; but in order to do so they must be properly managed.

Proper treatment for all farm woods in the Piedmont region can be summed up in four rules. (1) Grow more of the more valuable

FIG. 268.--A stand of mixed pine and hardwoods on the Piedmont Plateau, unburned and not grazed, but in need of a cutting to stimulate the growth of the better pines

trees; (2) cut the mature trees in such a way that a new crop will come in promptly; (3) by thinning the stand lightly and often, encourage the better trees to grow more rapidly; and (4) always protect the woodland from fire and from heavy grazing.

Any owner of farm woods in determining what trees will yield him the greatest returns will choose both those which grow most rapidly to merchantable size and those which will yield the most valuable wood. Yellow poplar, loblolly pine, and sweet gum will do both, if grown on moist, well-drained soil, as at the foot of a slope. Black walnut and shagbark hickory thrive on moist soils and produce wood of high value, although their growth is slow. Drier soils will produce good yields of shortleaf pine, oaks, black locust, and pignut hickory. Trees that are both of low value and slow growth should be eliminated as rapidly as possible without breaking up the stand.

Best Time to Weed Out

Weeding out poor species and defective trees is a continuous process, but is most effective when the stand is young. A very little work with the ax or brush hook when the trees are only a few feet high will do away with many of the so-called " weed " trees, such as sassafras, scrub oak, sumac, and dogwood. Later on, small and defective trees may be cut out for fuel. Such thinnings should leave a little space around the crowns of all the best trees in the stand, but should not be so heavy that the lower branches get light enough to live. Stands properly thinned at intervals of 5 or 10 years will develop long clear trunks and thrifty crowns capable of supporting a rapid growth.

Farm woods are subject to very serious loss from fire in the destruction of young trees and damage to older ones, and also in indirect loss through destruction of the leaf litter and organic matter in the soil. They can usually be protected from fire quite easily, however, and such protection should never be omitted.

One of the greatest sources of damage to farm woods is overgrazing, especially where livestock are kept fenced in the woods. Even where timber has grown beyond the sapling stage, it is better to have no grazing at all than to run the risk of overgrazing. Cattle do not browse on the pines, and therefore cattle grazing is not nearly so disastrous in the young pine woods of the Piedmont section as in the young hardwood timber; but if heavy grazing is permitted in very young pine stands much damage is done to the young trees by trampling.

Properly managed, the wood lot is an asset to any farm. It will provide perpetually the various kinds of wood needed in farm maintenance; it can be managed with little labor at off periods; it furnishes from time to time revenue not dependent upon season or weather; and, finally, a piece of woods adds attractiveness to the farm, and gives shade in summer and protection from cold winds and storms in winter.

E. H. Frothingham.

WOOL Shrinkage Tests Important to Sheep Raisers

Wool as it comes from the sheep contains a large quantity of foreign matter, particularly when it is produced on the broad, open spaces of our western ranges. Here the sheep are exposed to severe weather conditions and the wool soon becomes very dirty. (Fig. 269.) It is not unusual to find

fleeces in their natural condition that yield only 25 to 50 per cent clean wool, the remainder being grease, dirt, and foreign matter. Wide variations in this loss or shrinkage are a common occurrence among sheep running on the same range and even among the same sheep from one year to the next.

Expert judgment, combined with actual tests, furnishes the men in the wool trade information regarding this shrinkage not at the command of most woolgrowers.

Although this information is vital to the man in the trade for the intelligent buying of wool and efficient production of cloth, it is also essential to the woolgrower if he hopes to attain the highest efficiency in wool production. With such knowledge at his command he can breed and manage his sheep more intelligently.

FIG. 269.—Sheep grazing in the Southwest The dirt and foreign matter find ready access to the wool during the wind and storm in such rough, open country

With the idea constantly in mind of helping the woolgrower in his knowledge of wool shrinkage and thereby improving methods of wool production the Bureau of Animal Industry has undertaken special investigations which are throwing more light on this question. It is endeavoring to establish a method whereby a grower may determine quickly and in a practical manner the relative clean-wool production of his sheep at his own shearing shed and with inexpensive equipment.

Encouraging Progress Made

Such a goal may seem at first thought impossible to attain, but encouraging progress has already been made. In the examination and subsequent scouring of over 100 foreign and domestic wool

samples the writer observed large differences in density of light and heavy shrinking wools. This condition was often noted in fleeces from bales of wool that had been baled under high pressure and allowed to stand for a considerable time before opening. The difference in density is much more marked under such conditions than it is when the fleeces are first sheared. These observations led to a study of the density of unscoured wool, with the hope that it might throw a new light on wool shrinkage.

The apparatus used for compressing the wool and obtaining its density is shown in Figure 270. A whole fleece is weighed and placed in the tall cylinder, where it is compressed by means of the screw until the required pressure is shown on the scale beam. The

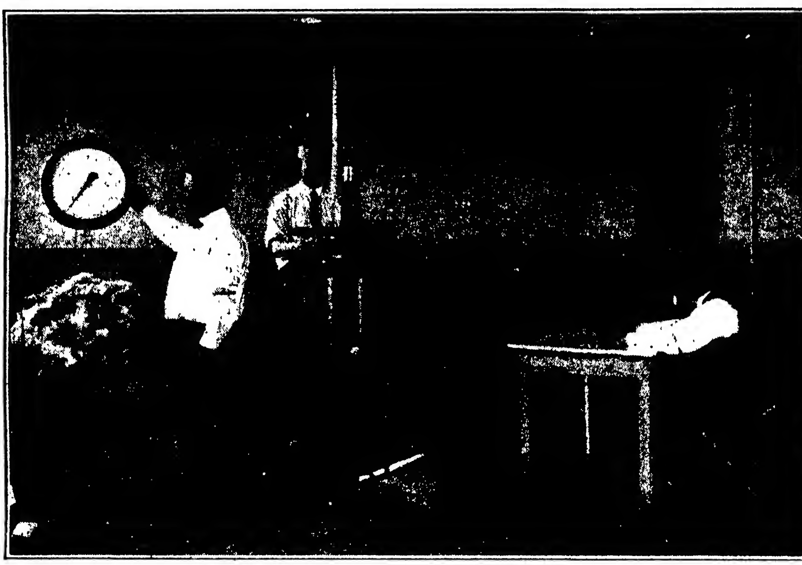

FIG. 270.—Weighing and compressing fleeces and recording results at the wool laboratory at the United States Range Livestock Experiment Station

depth of the compressed wool is read directly in millimeters opposite the thin disk on top of the screw. The volume occupied by a given weight of wool under definite pressure is readily calculated from this depth. In this manner a large number of samples of wool have been compressed and subsequently tested for clean-wool content. By referring to curves prepared from a large number of these tests one obtains readily the clean-wool content on similar samples without performing the scouring operation.

Definite weights of light-shrinking wools of a given grade occupy much more volume than heavy-shrinking wools of the same grade.

Although there is little doubt that these tests on fleeces are valuable and offer considerable assistance in the estimation of shrinkage, just how far the tests may be refined to meet the grower's needs is a question still under investigation.

J. I. HARDY.

WORKING Day of Farmers a High Average Often the question is raised as to how much farmers work as compared with those in other industries. Farm-management studies undertaken in recent years by the Bureau of Agricultural Economics in cooperation with State colleges of agriculture offer interesting information on the subject. As a part of these studies a careful and complete record is kept of all work done by each member of the labor force on small groups of farms. The average number of hours worked by the farm operator and by all other workmen in some of the areas in which studies have been or are being undertaken is shown in Table 31.

TABLE 31.—*The average number of hours worked by the farm operator and all other workmen for one year in selected farming areas*

State	Farming area	Year	Number of farms	Operator's labor	All other labor
				Hours	*Hours*
Colorado	Irrigated diversified crop and sheep feeding.	1924	21	2,590	5,165
Montana	Irrigated diversified crop	1920	16	2,831	2,812
Kansas	Winter wheat	1925	21	3,273	2,237
North Dakota	Spring wheat	1925	22	3,076	3,353
South Dakota	do	1925	19	3,098	3,938
Minnesota (south)	Diversified crop and livestock	1923	23	3,224	2,505
Minnesota (north)	Dairying	1925	29	3,242	3,332
Wisconsin	do	1922	23	3,405	3,280
Ohio (south)	Diversified crop and livestock	1923	20	3,027	2,830
Ohio (north)	do	1923	17	3,283	3,590
Iowa	do	1925	22	3,213	3,629
North Carolina	Tobacco and livestock	1925	20	2,781	6,694
Texas	Cotton (black-land belt)	1925	19	2,024	3,340

The hours of work shown in Table 31, include only the physical labor performed. The hours shown consist of work in the fields on crops, feeding and caring for livestock and miscellaneous maintenance and repair work about the farm. In addition the farm operator performed the duties incident to the management of the farm including the supervision of the work done by other workmen. The average amount of work done by other workmen on these farms is shown also in the table.

Some Work Much More Than Others

There is considerable variation in the number of hours worked during the year by the different farm operators. For example, one farmer in northern Minnesota worked only 848 hours, while another worked 3,948 hours. However, 25 out of the 29 farmers in this area for whom data are shown worked between 2,700 and 3,700 hours, the average for the group being 3,242 hours.

The variations in this area are fairly typical of the variations in the other areas. It should be remembered that data are included for farm operators of all ages, some of whom were supervising several other workmen. On the other hand it is possible that the farmers for whom data are shown worked more hours than the average since, as a rule, the more enterprising farmers are more likely to be interested in records of this kind.

The average number of hours worked per day by seasons in the different areas with week-day and Sunday given separately is shown in Table 32. From these data it appears that most farmers keep busy during the spring and summer—perhaps a larger number of them work on the average more than 10 hours per day than work less. Many of them also work long days in the fall—perhaps more of them work on the average longer than 9 hours per day than work less. Perhaps as many of them work 8 hours per day or more as work less during this winter period. The amount of work done during the winter season varies with the type of farming followed, being heaviest on those farms on which much livestock is kept. In addition to the week-day work, considerable farm work must be done on Sunday. This is particularly true on farms on which dairying is the principal enterprise.

Farmers Take Occasional Holidays

It is not to be assumed from these data that farmers work every day during the year. Practically every farmer takes a day off now and then. A given farmer will work more some days than others during the same season. The data merely show the average number of hours worked considering all work days and Sundays.

TABLE 32.—*Average hours worked by farm operators by seasons, week day and Sunday separate*

State	Winter [1]		Spring		Summer		Fall		Yearly average	
	Week day	Sunday	Week day	Sunday	Week day	Sunday	Week day	Sunday	Week day	Sunday
	Hours	*Hours*	*Hours*	*Hours*	*Hours*	*Hours*	*Hours*	*Hours*	*Hours*	*Hours*
Colorado	6.0	3.6	7.6	2.5	9.6	3.8	7.7	2.6	7.7	3.1
Montana	6.3	3.4	8.1	4.4	10.0	4.6	8.9	4.5	8.3	4.2
Kansas	8.5	5.2	10.1	4.7	10.8	3.7	9.6	4.2	9.7	4.4
North Dakota	7.4	4.8	10.0	5.0	10.2	4.5	9.4	4.4	9.3	4.7
South Dakota	7.0	4.5	10.2	4.6	10.0	4.3	9.5	3.8	9.2	4.3
Minnesota (south)	9.9	5.5	10.3	4.4	10.1	4.2	7.7	4.9	9.5	4.7
Minnesota (north)	8.7	5.2	10.2	4.7	10.0	3.7	9.6	4.2	9.6	4.5
Wisconsin	8.9	7.0	10.1	6.7	10.2	5.2	10.2	5.7	9.9	6.2
Ohio (south)	7.4	4.0	9.9	4.2	9.3	3.5	9.5	3.8	9.0	3.9
Ohio (north)	8.7	4.8	10.4	5.3	9.8	3.9	10.0	3.9	9.7	4.5
Iowa	8.3	3.4	10.7	3.3	10.3	2.9	9.6	2.8	9.8	3.1
North Carolina	7.0	1.4	9.0	1.5	10.0	1.5	8.6	1.4	8.7	1.4
Texas	5.5	1.7	6.1	1.8	6.8	1.9	6.3	1.7	6.2	1.8

[1] The year is divided into four equal parts, with December, January, and February considered winter the following three months, spring, etc.

J. B. HUTSON.

WORK Time of Horses on Farm Varies Widely In farming a considerable part of the crop area is used in producing feed for the work stock. The proportion of the total area necessary for this purpose depends to some extent upon the way in which the work stock requirements are distributed during the year. This is reflected in the average amount that each horse is worked during the year.

The hours of work per horse by seasons in selected farming areas of the United States is shown in Table 33. These data were obtained from farm-management studies undertaken in cooperation

with State colleges of agriculture. They show the number of hours that horses were worked as taken from records carefully kept and closely supervised.

TABLE 33.—*Hours of work per horse by seasons in selected farming areas*

State	Area	Year	Number of farms	Winter [1]	Spring	Summer	Fall	Total
Colorado	Irrigated diversified crop and sheep feeding.	1924	21	94	302	263	327	986
Montana	Irrigated diversified crop	1920	16	35	215	236	219	705
Kansas	Winter wheat	1925	21	128	287	255	157	827
South Dakota	Spring wheat	1922	20	60	241	306	211	818
Minnesota	Diversified crop and dairying	1920	23	92	221	300	219	832
Wisconsin	Dairying	1922	23	86	222	230	172	710
Ohio (south)	Diversified crop and livestock	1923	20	66	240	205	125	636
Ohio (north)	do	1923	17	86	211	264	150	711
Kentucky	Tobacco and livestock	1924	18	65	287	296	208	856
North Carolina	do	1925	20	188	487	308	184	1,167
Texas	Cotton (black-land belt)	1925	21	289	295	231	99	914

[1] The year is divided into four equal parts: December, January, and February are considered winter, the following three months spring, etc.

Work is Seasonal

Generally horses are worked more in the spring and summer than in the fall and winter. As a rule, they are worked about one-third the work days during the spring and summer seasons. During the fall months perhaps one-fourth the work days is a more common practice. In winter, in most sections, perhaps less than one-tenth of the total available horse work is utilized in as many cases as more is used. In the South, because of an earlier planting, horses are usually worked more in February and March than during the fall months. This explains the large amount of horse work shown for North Carolina and Texas during the winter season. The large amount of horse work shown for Colorado in the fall is explained by the fact that potatoes and sugar beets were important crops in the area from which these data were obtained, and both require much horse work in harvesting and marketing during the fall season.

There is a wide variation in the amounts horses are worked on different farms and in different areas. Important factors in determining these differences are the length of the growing season and the system of farming being followed. For example, in a farming area in southern Ohio in 1923, the horses on 20 farms were worked on the average only 636 hours per horse, while in an area of North Carolina in 1925 the horses on 20 farms were worked on the average 1,167 hours. That is, in southern Ohio the horses were worked during the year the equivalent of 63.6 days of 10 hours each, and in North Carolina they were worked the equivalent of 116.7 days. In western Kentucky one of the 18 farmers worked his horses on the average the equivalent of 59.6 10-hour days, while another worked them the equivalent of 145.5 days. The latter followed a more diversified system than the former.

Some Keep Too Many Horses

Often farmers keep more work horses than are required by the crops grown and other livestock kept. For example, a Colorado

farmer keeping seven work horses never worked more than six of them at any one time during the year. He worked more than four only 17 days during the year. As a result, he used 20 per cent of his total crop area in producing feed for the work stock. It is to the farmer's interest to plan the crops and livestock so that the horse work requirements will be distributed as much as possible and at the same time to plan to keep only as many mature horses as are necessary to take care of these needs.

J. B. Hutson.

Miscellaneous Lists

List of new Farmers' Bulletins, Department Bulletins, Department Circulars, Miscellaneous Circulars, and Statistical Bulletins issued from January 1, 1926, to December 31, 1926, classified by general subject matter

[These different types of publications are indicated by the letters preceding each serial number]

BEES:		
Effects on Honeybees of Spraying Fruit Trees with Arsenicals	D. B.	1364
The Sterilization of American Foulbrood Combs	D. C.	284
COTTON:		
Weather Damage to Cotton	D. B.	1438
Uniform-Depth Press-Wheel Cotton-Planter Attachment	D. C.	381
Study of Off-Type of Acala Cotton	D. C.	390
EXTENSION SERVICE		
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Fertilizer Experiments with Alfalfa conducted at the United States Yuma Field Station, Bard, Calif., 1919 to 1925	D. B.	1418
Comparative Shrinkage in Weight of Alfalfa Cured with Leaves Attached and Removed	D. B.	1424
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List of Land-Grant Colleges in the United States

November, 1926

This list includes all colleges of agriculture and mechanic arts receiving the benefits of the acts of Congress of July 2, 1862, and August 30, 1890. Those marked with an asterisk (*) do not maintain courses of instruction in agriculture.

State or Territory	Name of institution and location	President [1]
ALABAMA	Alabama Polytechnic Institute, Auburn	Spright Dowell.
	Agricultural and Mechanical Institute for Negroes, Normal	T. R. Parker.
ALASKA	Alaska Agricultural College and School of Mines, Fairbanks	C. E. Bunnell.
ARIZONA	College of Agriculture of University of Arizona, Tucson	J. J. Thornber.[2]
ARKANSAS	College of Agriculture of University of Arkansas, Fayetteville	D. T. Gray.[2]
	State Agricultural, Mechanical and Normal School, Pine Bluff	R. E. Malone [3]
CALIFORNIA	College of Agriculture of University of California, Berkeley	E. D. Merrill.[2]
COLORADO	State Agriculture College of Colorado, Fort Collins	C. A. Lory.
CONNECTICUT	Connecticut Agricultural College, Storrs	C. L. Beach.
DELAWARE	School of Agriculture, University of Delaware, Newark	C. A. McCue.[2]
	State College for Colored Students, Dover	R. S. Grossley.
FLORIDA	College of Agriculture of University of Florida, Gainesville	Wilmon Newell [2]
	Florida Agricultural and Mechanical College for Negroes, Tallahassee.	J. R. E. Lee.
GEORGIA	Georgia State College of Agriculture, Athens	A. M. Soule
	Georgia State Industrial College, Savannah	B. F. Hubert.
HAWAII	University of Hawaii, Honolulu	A. L. Dean
IDAHO	College of Agriculture of University of Idaho, Moscow	E. J. Iddings.[2]
ILLINOIS	College of Agriculture of University of Illinois, Urbana	H. W. Mumford.[2]
INDIANA	School of Agriculture of Purdue University, LaFayette	J. H. Skinner [2]
IOWA	Iowa State College of Agricultural and Mechanic Arts, Ames	
KANSAS	Kansas State Agricultural College, Manhattan	F. D. Farrell
KENTUCKY	College of Agriculture of University of Kentucky, Lexington	T. P. Cooper [2]
	Kentucky State Industrial College, Frankfort	G. P. Russell
LOUISIANA	Louisiana State University and Agricultural and Mechanical College, Baton Rouge.	T. D. Boyd
	Southern University and Agricultural and Mechanical College, Scotlandville.	J. S. Clark.
MAINE	College of Agriculture of University of Maine, Orono	L. S. Merrill [2]
MARYLAND	College of Agriculture of University of Maryland, College Park	H. J. Patterson.[2]
	Princess Anne Academy, Princess Anne	T. H. Kiah.[4]
MASSACHUSETTS	Massachusetts Agricultural College, Amherst	E. M. Lewis.
	*Massachusetts Institute of Technology, Cambridge	S. W. Stratton.
MICHIGAN	Michigan State College of Agriculture and Applied Science, East Lansing	K. L. Butterfield.
MINNESOTA	Department of Agriculture of the University of Minnesota, University Farm, St Paul.	W. C. Coffey [2]
MISSISSIPPI	Mississippi Agricultural and Mechanical College, Agricultural and Mechanical College.	B. M. Walker.
	Alcorn Agricultural and Mechanical College, Alcorn	L. J. Rowan
MISSOURI	College of Agriculture of University of Missouri, Columbia	F. B. Mumford.[2]
	*School of Mines and Metallurgy of University of Missouri, Rolla.	A. L. McRae.[5]
	Lincoln University, Jefferson City	N. B. Young.
MONTANA	Montana State College of Agriculture and Mechanical Arts, Bozeman.	Alfred Atkinson.
NEBRASKA	College of Agriculture of University of Nebraska, Lincoln	E. A. Burnett [2]
NEVADA	College of Agriculture of University of Nevada, Reno	Robt. Stewart [2]
NEW HAMPSHIRE	The University of New Hampshire, Durham	R. D. Hetzel.
NEW JERSEY	State College of Agriculture and Mechanic Arts of Rutgers University and State University of New Jersey, New Brunswick.	J. G. Lipman.[2]
NEW MEXICO	New Mexico College of Agriculture and Mechanic Arts, State College	H. L. Kent.
NEW YORK	New York State College of Agriculture, Ithaca	A. R. Mann.[2]
NORTH CAROLINA	North Carolina State College of Agriculture and Engineering, State College Station, Raleigh.	E. C. Brooks.
	Negro Agricultural and Technical College, Greensboro	F. D. Bluford.
NORTH DAKOTA	North Dakota Agricultural College, State College Station, Fargo	J. L. Coulter.
OHIO	College of Agriculture of Ohio State University, Columbus	Alfred Vivian.[2]
OKLAHOMA	Oklahoma Agricultural and Mechanical College, Stillwater	Bradford Knapp.
	Colored Agricultural and Normal University, Langston	I. W. Young.
OREGON	Oregon Agricultural College, Corvallis	W. J. Kerr.
PENNSYLVANIA	School of Agriculture of Pennsylvania State College, State College	R. L. Watts.[2]
PORTO RICO	Colleges of Agriculture and Engineering of University of Porto Rico, Mayaguez.	C. E. Horne.[2]
RHODE ISLAND	Rhode Island State College, Kingston	Howard Edwards.
SOUTH CAROLINA	Clemson Agricultural College of South Carolina, Clemson College.	E. W. Sikes.
	The Colored Normal, Industrial, Agricultural, and Mechanical College of South Carolina, Orangeburg.	R. S. Wilkinson.

[1] The name of the dean of the college of agriculture is given where that college is a part of a university.
[2] Dean.
[3] Superintendent.
[4] Principal.
[5] Director.

List of Land-Grant Colleges in the United States—Continued

State or Territory	Name of institution and location	President [1]
SOUTH DAKOTA	South Dakota State College of Agriculture and Mechanic Arts, Brookings.	C. W. Pugsley.
TENNESSEE	College of Agriculture of University of Tennessee, Knoxville	C. A. Willson.[2]
	Tennessee Agricultural and Industrial State College, Nashville	W. J. Hale.
TEXAS	Agricultural and Mechanical College of Texas, College Station	T. O. Walton.
	Prairie View State Normal and Industrial College, Prairie View	W. R. Banks.[4]
UTAH	Agricultural College of Utah, Logan	E. G. Peterson.
VERMONT	College of Agriculture of University of Vermont, Burlington	J. L. Hills.[2]
VIRGINIA	Virginia Agricultural and Mechanical College and Polytechnic Institute, Blacksburg.	J. A. Burruss.
	Virginia Normal and Industrial Institute, Ettricks	J. M. Gandy.
WASHINGTON	State College of Washington, Pullman	E. O. Holland.
WEST VIRGINIA	College of Agriculture of West Virginia University, Morgantown	H. G. Knight.[2]
	West Virginia Collegiate Institute, Institute	J. W. Davis.
WISCONSIN	College of Agriculture of University of Wisconsin, Madison	H. L. Russell.[2]
WYOMING	College of Agriculture of University of Wyoming, Laramie	J. A. Hill.[3]

[2] Dean. [4] Principal.

List of Agricultural Experiment Stations in the United States

November, 1926

This list gives the post-office addresses of the agricultural experiment stations in the United States, followed by the name of the director or other officer in charge:

ALABAMA—
 (College station), Auburn: M. J. Funchess.
 (Canebrake station), Uniontown: W. A. Cammack.
 (Tuskegee station), Tuskegee Institute: G. W. Carver.
ALASKA—Sitka: C. C. Georgeson.
ARIZONA—Tucson: J. J. Thornber.
ARKANSAS—Fayetteville: D. T. Gray.
CALIFORNIA—Berkeley: E. D. Merrill.
COLORADO—Fort Collins: C. P. Gillette.
CONNECTICUT—
 State station, New Haven } W. L. Slate, jr.
 Storrs station, Storrs }
DELAWARE—Newark: C. A. McCue.
FLORIDA—Gainesville: Wilmon Newell.
GEORGIA—
 (State station), Experiment: H. P. Stuckey.
 (Coastal Plain station), Tifton: S. H. Starr.
GUAM, ISLAND OF—Guam: C. W. Edwards.
HAWAII—
 (Federal station), Honolulu: J. M. Westgate.
 (Sugar Planters' station), Honolulu: H. P. Agee.
IDAHO—Moscow: E. J. Iddings.
ILLINOIS—Urbana: H. W. Mumford.
INDIANA—La Fayette: G. I. Christie.
IOWA—Ames: C. F. Curtiss.
KANSAS—Manhattan: L. E. Call.
KENTUCKY—Lexington: T. P. Cooper.
LOUISIANA—
 State station, Baton Rouge }
 Sugar station, Baton Rouge }
 North Louisiana station, Calhoun } W. R. Dodson
 Rice station, Crowley }
 Fruit and Truck station, Hammond }
MAINE—Orono: W. J. Morse.
MARYLAND—College Park: H. J. Patterson.
MASSACHUSETTS—Amherst: S. B. Haskell.
MICHIGAN—East Lansing: R. S. Shaw.
MINNESOTA—University Farm, St. Paul: W. C. Coffey.
MISSISSIPPI—A. and M. College: J. R. Ricks.
MISSOURI—
 (College station), Columbia: F. B. Mumford.
 (Fruit station), Mountain Grove: F. W. Faurot.
 (Poultry station), Mountain Grove: T. W. Noland.
MONTANA—Bozeman: F. B. Linfield.
NEBRASKA—Lincoln: E. A. Burnett.
NEVADA—Reno: S. B. Doten.
NEW HAMPSHIRE—Durham: J. C. Kendall.
NEW JERSEY—New Brunswick: J. G. Lipman.
NEW MEXICO—State College: Fabian Garcia.
NEW YORK—
 State station, Geneva: } R. W. Thatcher.
 Cornell station, Ithaca: }
NORTH CAROLINA—State College Station, Raleigh: R. Y. Winters.
NORTH DAKOTA—State College Station, Fargo: P. F. Trowbridge

OHIO—Wooster: C. G. Williams.
OKLAHOMA—Stillwater: C. T. Dowell.
OREGON—Corvallis: J. T. Jardine.
PENNSYLVANIA—
  (College station), State College: R. L. Watts.
  (Institute of Animal Nutrition), State College: E. B. Forbes.
PORTO RICO—
  (Federal station), Mayaguez: D. W. May.
  (Insular station), Rio Piedras: F. A. Lopez Dominguez.
RHODE ISLAND—Kingston: B. L. Hartwell.
SOUTH CAROLINA—Clemson College: H. W. Barre.
SOUTH DAKOTA—Brookings: J. W. Wilson.
TENNESSEE—Knoxville: C. A. Mooers.
TEXAS—College Station: A. B. Conner.[1]
UTAH—Logan: William Peterson.
VERMONT—Burlington: J. L. Hills.
VIRGINIA—
  (College station), Blacksburg: A. W. Drinkard, jr.
  (Truck station), Norfolk: T. C. Johnson.
VIRGIN ISLANDS, U. S. A.—St. Croix: J. B. Thompson.
WASHINGTON—
  (College station), Pullman: E. C. Johnson.
  (Western Wash. station), Puyallup: J. W. Kalkus.[2]
WEST VIRGINIA—Morgantown: H. G. Knight.
WISCONSIN—Madison: H. L. Russell.
WYOMING—Laramie: J. A. Hill.

National Forests

June 30, 1926

Forest	State in which located	Net area
		Acres
Absaroka	Montana	851, 046
Alabama	Alabama	105, 534
Allegheny	Pennsylvania	149, 232
Angeles	California	646, 192
Apache	Arizona and New Mexico.	1, 564, 046
Arapaho	Colorado	636, 446
Ashley	Utah and Wyoming	988, 440
Beartooth	Montana	660, 127
Beaverhead	do	1, 339, 224
Bellevue-Savanna.	Illinois	10, 710
Benning	Georgia	78, 560
Bighorn	Wyoming	1, 125, 632
Bitterroot	Montana	1, 047, 071
Blackfeet	do	836, 967
Black Hills	South Dakota and Wyoming.	626, 412
Boise	Idaho	1, 062, 768
Cabinet	Montana	829, 311
Cache	Idaho and Utah	777, 891
California	California	822, 735
Caribou	Idaho and Wyoming	710, 369
Carson	New Mexico	1, 067, 082
Cascade	Oregon	1, 023, 510
Challis	Idaho	1, 272, 050
Chelan	Washington	1, 807, 811
Cherokee	Georgia, North Carolina, and Tennessee.	236, 083
Chugach	Alaska	4, 794, 079
Clearwater	Idaho	787, 985
Cleveland	California	380, 109
Cochetopa	Colorado	908, 787
Coconino	Arizona	1, 716, 806
Coeur d'Alene	Idaho	662, 982
Colorado	Colorado	829, 414
Columbia	Washington	763, 179
Colville	do	745, 781
Coronado	Arizona and New Mexico.	1, 480, 084
Crater	California and Oregon.	853, 306
Crook	Arizona	1, 428, 345
Custer	Montana and South Dakota.	590, 764
Datil	New Mexico	1, 753, 051
Deerlodge	Montana	828, 980
Deschutes	Oregon	1, 294, 743
Dix	New Jersey	6, 785
Dixie	Nevada and Utah	851, 854
Eldorado	California and Nevada.	551, 878
Eustis	Virginia	4, 220
Fishlake	Utah	1, 384, 742
Flathead	Montana	1, 721, 478
Florida	Florida	342, 771
Fremont	Oregon	849, 286
Gallatin	Montana	581, 002
Gila	New Mexico	1, 596, 201
Grand Mesa	Colorado	659, 264
Gunnison	do	905, 256
Harney	South Dakota	508, 755
Hayden	Colorado and Wyoming.	393, 893
Helena	Montana	682, 322
Holy Cross	Colorado	1, 124, 534
Humboldt	Nevada	1, 322, 352
Humphreys	Virginia	3, 184
Idaho	Idaho	1, 687, 915
Inyo	California and Nevada.	1, 698, 664
Jackson	South Carolina	20, 225
Jefferson	Montana	1, 040, 395
Kaibab	Arizona	769, 894
Kaniksu	Idaho and Washington	444, 686
Klamath	California and Oregon.	1, 533, 980
Knox	Kentucky	22, 660
Kootenai	Montana	1, 334, 978
La Sal	California and Utah	530, 922
Lassen	California	944, 292
Leadville	Colorado	927, 487
Lee	Virginia	7, 177
Lemhi	Idaho	1, 357, 705
Lewis and Clark	Montana	810, 731
Lincoln	New Mexico	1, 114, 207
Lolo	Montana	851, 249
Luquillo	Porto Rico	12, 443
Madison	Montana	953, 456
Malheur	Oregon	1, 048, 506
Manti	Utah	724, 432
Manzano	New Mexico	669, 010
McClellan	Alabama	15, 350
Meade	Maryland	4, 725
Medicine Bow	Wyoming	552, 174
Michigan	Michigan	126, 762

[1] Acting Director.
[2] Superintendent.

National Forests—*Continued*

June 30, 1926

Forest	State in which located	Net area
		Acres
Minidoka	Idaho and Utah	590,744
Minnesota	Minnesota	190,945
Missoula	Montana	1,022,835
Modoc	California	1,470,005
Mono	California and Nevada.	1,260,536
Monongahela	Virginia and West Virginia.	174,325
Montezuma	Colorado	697,333
Mount Baker	Washington	1,460,665
Mount Hood	Oregon	1,059,292
Nantahala	Georgia, North Carolina and South Carolina.	244,680
Natural Bridge	Virginia	152,831
Nebraska	Nebraska	205,946
Nevada	Nevada	1,175,128
Nezperce	Idaho	1,661,166
Ochoco	Oregon	718,154
Olympic	Washington	1,530,867
Ouachita	Arkansas	663,987
Ozark	do	304,855
Payette	Idaho	1,307,235
Pend Oreille	do	673,940
Pike	Colorado	1,086,990
Pine Plains	New York	9,800
Pisgah	North Carolina and Tennessee.	278,257
Plumas	California	1,107,947
Powell	Utah	1,050,462
Prescott	Arizona	1,164,829
Rainier	Washington	1,276,532
Rio Grande	Colorado	1,135,898
Routt	do	748,838
Salmon	Idaho	1,708,478
San Bernardino	California	597,301
San Isabel	Colorado	598,936
San Juan	do	1,239,361
Santa Barbara	California	1,772,555
Santa Fe	New Mexico	1,270,372
Santiam	Oregon	610,918
Sawtooth	Idaho	1,158,259
Selway	do	1,689,157
Sequoia	California	1,450,133
Shasta	do	868,373
Shenandoah	Virginia and West Virginia.	414,294
Shoshone	Wyoming	1,584,027
Sierra	California	1,492,617
Siskiyou	California and Oregon.	1,362,134
Sitgreaves	Arizona	671,984
Siuslaw	Oregon	549,850
Snoqualmie	Washington	689,574
Stanislaus	California	810,632
St. Joe	Idaho	555,618
Superior	Minnesota	800,161
Tahoe	California and Nevada.	516,714
Targhee	Idaho and Wyoming.	1,375,097
Teton	Wyoming	1,881,052
Tobyhanna	Pennsylvania	20,870
Toiyabe	Nevada	1,883,583
Tongass	Alaska	16,549,093
Tonto	Arizona	2,260,709
Trinity	California	1,410,202
Tusayan	Arizona	1,271,067
Uinta	Utah	1,077,292
Umatilla	Oregon and Washington.	1,233,310
Umpqua	Oregon	1,014,029
Unaka	North Carolina, Tennessee, and Virginia.	156,154
Uncompahgre	Colorado	777,701
Upton	New York	6,154
Wallowa	Oregon	962,014
Wasatch	Utah	609,247
Washakie	Wyoming	865,282
Weiser	Idaho	565,625
Wenatchee	Washington	842,800
White River	Colorado	885,134
Whitman	Oregon	1,319,506
White Mountain	Maine and New Hampshire.	441,205
Wichita	Oklahoma	61,480
Wyoming	Wyoming	1,666,688

Federal Bird Refuges and Game Preserves

DEPARTMENT OF AGRICULTURE

Designation	Number on map	Acres	Chief species protected
Biological Survey			
ALABAMA:			
Petit Bois Island	63	635	Laughing gulls, least terns, black skimmers, Louisiana herons.
ALASKA:			
Aleutian Islands			Puffins, auklets, murres, gulls, ducks, geese, ptarmigan, blue foxes.
Bering Sea			Puffins, auklets, kittiwakes, glaucous gulls, sandpipers, snow buntings.
Bogoslof			Sea lions, auklets, murres, gulls.
Chamisso Island			Horned puffins, Pallas murres, Pacific kittiwakes, glaucous gulls.
Forrester Island			Puffins, auklets, murrelets, murres, guillemots, gulls, petrels, cormorants.
Hazy Islands			Puffins, auklets, murres, guillemots, gulls, cormorants.
St. Lazaria			Puffins, auklets, murres, guillemots, gulls, petrels, cormorants.
Tuxedni			Various sea birds.

Federal Bird Refuge and Game Preserves—Continued

DEPARTMENT OF AGRICULTURE—Continued

Designation	Number on map	Acres	Chief species protected
ARIZONA:			
Salt River	27	21,120	Cormorants, white pelicans, waterfowl.
ARKANSAS:			
Big Lake	70	7,774	Ducks of many species.
CALIFORNIA:			
Clear Lake	52	33,840	Gulls, cormorants, ducks, geese, herons.
Farallon	49		Puffins, auklets, guillemots, murres, gulls, cormorants.
FLORIDA:			
Brevard	77	12	Brown pelicans.
Caloosahatchee	73		Ducks, herons
Indian Key	7	90	Pelicans, white ibises, egrets, Louisiana and little blue herons.
Island Bay	24		Brown pelicans, herons.
Key West	17		Cormorants, pelicans, man-o'-war birds, roseate spoonbills, white ibises, herons.
Matlacha Pass	23		Cormorants, pelicans, herons.
Mosquito Inlet	15		Least terns, pelicans, herons.
Palma Sola	22		Man-o'-war birds, herons.
Passage Key	6	5	Laughing gulls, terns, skimmers, cormorants, sandpipers.
Pelican Island	1	6	Brown pelicans.
Pine Island	21		Pelicans, herons.
Tortugas Keys	16	141	Sooty and noddy terns
GEORGIA:			
Blackbeard Island	66	1,600	White-tailed deer, raccoons, opossums, herons, cranes.
HAWAII:			
Hawaiian Islands			Terns, albatrosses, shearwaters, petrels, gannets, man-o'-war birds, Laysan teal, rails, and finches.
Johnston Island			Sooty and noddy terns, shearwaters, petrels, boobies, man-o'-war birds.
IDAHO:			
Deer Flat	29	12,300	Ducks, geese, pheasants.
Minidoka	43	13,240	Grebes, Forster terns, cormorants, ducks, coots, avocets, sage hens.
ILLINOIS:			
Upper Mississippi River Wild Life and Fish Refuge (see Minnesota).	(1)		
IOWA:			
Upper Mississippi River Wild Life and Fish Refuge (see Minnesota).	(1)		
LOUISIANA:			
Breton Island	2		Laughing gulls, royal and Cabot terns, skimmers, herons, willets.
East Timbalier	14	63	Gulls, Royal terns, skimmers, pelicans, herons, clapper rails.
Shell Keys	9		Royal terns, brown pelicans, man-o'-war birds
Tern Islands	8		Laughing gulls, royal, Cabot, and Forster terns, brown pelicans.
MICHIGAN:			
Huron Islands	4	83	Herring gulls, ducks.
Siskiwit Islands	5	9	Do.
MINNESOTA:			
Mille Lacs	69	7	Gulls, ducks, geese.
Upper Mississippi River Wild Life and Fish Refuge (in the States of Illinois, Iowa, Minnesota, and Wisconsin).	(1)		
MONTANA:			
National Bison Range	10½	18,522	Buffalo, elk, deer, mountain sheep, grouse, pheasants
Nine Pipe	74		Ducks, coots.
Pablo	75		Do.
Pishkun	58	3,160	Gulls, ducks, geese, swans.
Willow Creek	30	3,200	Ducks, geese.
NEBRASKA:			
Niobrara	55	16,125	Buffalo, elk, deer, antelope, prairie chickens, sharp-tailed grouse.
North Platte	72	5,107	Ducks, geese, swans, shorebirds.
NEVADA:			
Anaho Island	64	248	Gulls, cormorants, white pelicans.
NEW MEXICO:			
Carlsbad	31	18,680	Ducks, shorebirds
Rio Grande	32	55,680	Grebes, cormorants, ducks, geese, shorebirds.

[1] In process of establishment.

Federal Bird Refuge and Game Preserves—Continued

DEPARTMENT OF AGRICULTURE—Continued

Designation	Number on map	Acres	Chief species protected
NORTH DAKOTA:			
Chase Lake	20	2,839	Gulls, white pelicans, ducks, shorebirds, grouse.
Stump Lake	3	28	Western grebes, gulls, terns, ducks, Wilson phalaropes.
Sullys Hill National Game Preserve.	65½	700	Buffalo, elk, deer, golden-eye and wood ducks, geese, pheasants.
OREGON:			
Cold Springs	33	2,520	Ducks, geese, swans, herons, sharp-tailed grouse.
Klamath Lake	18	81,619	Ducks, geese, coots, gulls, shorebirds.
Lake Malheur	19	88,960	Gulls, cormorants, pelicans, ducks, geese, swans, herons, avocets.
Three Arch Rocks	10		Puffins, guillemots, murres, gulls, fork-tailed and Kaeding petrels, cormorants.
PORTO RICO:			
Culebra			Gulls, royal terns, Bahama ducks, herons, coots, ground doves.
Desecheo Island			Terns, boobies, gannets, man-o'-war birds, oyster-catchers.
SOUTH DAKOTA:			
Belle Fourche	34	13,680	Ducks, geese, curlews, prairie chickens, pheasants.
Wind Cave National Game Preserve.	56½	4,160	Buffalo, elk, antelope, grouse, quail.
UTAH:			
Strawberry Valley	35	8,560	Ducks, sage hens
WASHINGTON:			
Columbia River	79	8	Gulls, ducks, geese, herons
Conconully	40	1,120	Ducks, sooty and sharp-tailed grouse, Hungarian partridges
Copalis Rock	13	5	Puffins, murres, glaucous and western gulls, petrels, cormorants.
Dungeness Spit	67	227	Grebes, loons, gulls, ducks.
Ediz Hook	68	84	Pigeon guillemots, California murres, cormorants.
Flattery Rocks	11	68	Tufted puffins, pigeon guillemots, California murres.
Smith Island	65		Western grebes, pigeon guillemots, California murres, cormorants, ducks
Quillayute Needles	12	117	Grebes, auklets, glaucous-winged and western gulls, cormorants, ducks.
WISCONSIN:			
Gravel Island (Lake Michigan)	60		Herring gulls.
Green Bay	56		Do.
Upper Mississippi River Wild Life and Fish Refuge (see Minnesota).	(1)		
WYOMING:			
Elk Refuge	68½	2,760	Elk (in winter), ducks, geese, sage hens.
Flat Creek	76	40	Elk (in winter), ducks, geese.
Forest Service [2]			
ARIZONA:			
Grand Canyon Game Preserve.	103	886,208	Mule deer, Kaibab squirrels, dusky grouse.
ARKANSAS:			
Ozark National Game Refuges Nos. 1, 2, 3, and 4.	108	21,500	White-tailed deer, bobwhite quail, turkeys.
GEORGIA:			
Cherokee National Game Refuge No. 2.	106	14,000	White-tailed deer, quail, turkeys.
NORTH CAROLINA:			
Pisgah Game Preserve	102	77,045	Buffalo, elk, white-tailed deer, quail, turkeys.
OKLAHOMA:			
Wichita National Game Preserve.	100	57,120	Buffalo, elk, white-tailed deer, antelope, ducks, quail turkeys.
SOUTH DAKOTA:			
Custer State Park Game Sanctuary.	104	44,360	Deer, Rocky Mountain goats, mountain sheep, elk, dusky and ruffed grouse.
TENNESSEE:			
Cherokee National Game Refuge No. 1.	105	30,000	White-tailed deer, quail, turkeys.
WASHINGTON:			
Mount Olympus National Monument.	101	299,370	Olympic elk, black-tailed deer, bears, grouse.
WYOMING:			
Medicine Bow	107	26,240	Elk, mule deer, grouse.

[1] In process of establishment.
[2] On national monuments administered by the National Park Service and by the Forest Service birds and animals are also protected under Federal law, although these are not strictly game preserves or bird refuges.

Federal Bird Refuge and Game Preserves—Continued

DEPARTMENT OF COMMERCE

Designation	Number on map	Acres	Chief species protected
Bureau of Fisheries			
ALASKA:			
Afognak Forest and Fish Cultural Reserve.	-------	512,000	Sea otters.
Pribilof Islands	-------	49,000	Fur seals, sea lions, sea otters, puffins, auklets, murres, gulls, fulmars, cormorants, Pribilof sandpipers.
Bureau of Lighthouses			
CALIFORNIA:			
Año Nuevo Island Lighthouse Reservation.	135	-------	Sea lions.
South Farallon Island Lighthouse Reservation (see Navy Department).	133	120	Sea lions, puffins, auklets, guillemots, gulls, petrels, cormorants.
LOUISIANA:			
Chandeleur Lighthouse Reservation	130	5,000	Laughing gulls, terns, skimmers, pelicans.
Errol Island	134	640	Laughing gulls, terns, skimmers.
WASHINGTON:			
New Dungeness Lighthouse Reservation.	131	190	Grebes, loons, gulls, ducks.
Smith Island Lighthouse Reservation.	132	5,600	Grebes, puffins, murres, gulls, cormorants, geese, ducks.

DEPARTMENT OF THE INTERIOR

Designation	Number on map	Acres	Chief species protected
National Park Service [2]			
ALASKA:			
Katmai National Monument.	-------	1,087,990	Brown bears, foxes, waterfowl.
Mount McKinley National Park	-------	1,692,800	Mountain sheep, caribou, moose, bears, grouse
ARIZONA:			
Grand Canyon National Park.	160	613,120	Mountain sheep, mule deer, antelope, beavers, squirrels, dusky grouse.
Papago Saquaro National Monument.	154	1,940	Nongame birds.
Petrified Forest National Monument.	150	26,625	Do.
CALIFORNIA:			
General Grant National Park.	141	2,536	Mule deer, quail, grouse.
Lassen Volcanic National Park.	156	79,562	Mule deer, bears, quail, grouse.
Muir Woods National Monument.	151	426	Deer, nongame birds.
Sequoia National Park	142	161,597	Deer, elk, bears, quail, grouse.
Yosemite National Park	143	719,802	Deer, bears, quail, grouse.
COLORADO:			
Colorado National Monument.	153	13,883	Mule deer.
Mesa Verde National Park.	149	48,966	Elk, mule deer, bears.
Rocky Mountain National Park.	155	253,782	Elk, mule deer, sheep, bears, beavers, sooty grouse.
HAWAII:			
Hawaii National Park	-------	118,695	Hawaiian geese, nongame birds.
IDAHO:			
Yellowstone National Park (see Montana and Wyoming).	140	23,040	
MAINE:			
Lafayette National Park	161	5,404	White-tailed deer, beavers, ducks, geese, grouse.
MONTANA:			
Glacier National Park	152	981,681	Deer, elk, moose, sheep, bears, ducks, geese, grouse, ptarmigan.
Yellowstone National Park (see Idaho and Wyoming).	140	126,720	
NORTH DAKOTA:			
Sullys Hill National Park	148	780	(See Sullys Hill National Game Preserve, administered by Bureau of Biological Survey, Department of Agriculture.)

[2] On national monuments administered by the National Park Service and by the Forest Service birds and animals are also protected under Federal law, although these are not strictly game preserves or bird refuges.

Federal Bird Refuge and Game Preserves—Continued

DEPARTMENT OF THE INTERIOR—Continued

Designation	Number on map	Acres	Chief species protected
OKLAHOMA:			
Platt National Park	146	849	Buffalo, elk, white-tailed deer.
OREGON:			
Crater Lake National Park.	145	159,359	Black-tailed deer, elk, bears, grouse.
SOUTH DAKOTA:			
Wind Cave National Park.	147	10,900	Grouse. (See also Wind Cave National Game Preserve, administered by Biological Survey.)
UTAH:			
Zion National Park	162	76,800	Deer, grouse.
WASHINGTON			
Mount Rainier National Park.	144	207,360	Black-tailed deer, Rocky Mountain goats, bears, grouse.
WYOMING:			
Yellowstone National Park (see Idaho and Montana).	140	1,992,960	Buffalo, Mountain sheep, antelope, mule deer, white-tailed deer, moose, bears, pelicans, ducks, geese, swans, dusky and ruffed grouse.

NAVY DEPARTMENT [3]

CALIFORNIA			
South Farallon (see Department of Commerce, Bureau of Lighthouses).	170	10	Cormorants and sea birds.
HAWAII			
Midway Islands			Albatrosses, Laysan rails, Laysan finches
VIRGINIA.			
Naval Operation Base (Hampton Roads)	172	945	Rabbits, quail.
Navy Mine Depot (Yorktown)	173	12,467	Rabbits, quail, turkeys

WAR DEPARTMENT [4]

GEORGIA			
Chickamauga and Chattanooga National Military Park (see Tennessee)	180		Rabbits, gray squirrels, quail.
MISSISSIPPI			
Vicksburg National Military Park	182	1,323	Squirrels, opossums, rabbits, raccoons, foxes, quail.
TENNESSEE.			
Chickamauga and Chattanooga National Military Park (see Georgia)	180	Roads only.	Rabbits, gray squirrels, quail
Shiloh National Military Park	181	3,546	Foxes, raccoons, opossums, squirrels, muskrats, weasels, skunks, minks

[3] On three other national military parks also—Antietam Battlefield, Guilford Courthouse, and Gettysburg—and on national cemeteries birds receive protection.
[4] Birds are protected also at the naval ammunition depot, St. Juliens Creek, Va. (221 6 acres), and at the Norfolk (Va.) Navy Yard (361 6 acres), by order of the commandant, Fifth Naval District.

Changes in the value of farm real estate, 1920–1926, 1926 Yearbook article (Wiecking)

[Data for Figure 123]

	United States total net farm income available for capital (billions)	Farm prices, 30 products
	Dollars	*Per cent*
1919–20, July 1–June 30	5,030	100.0
1920–21, July 1–June 30	375	69.2
1921–22, July 1–June 30	785	54.1
1922–23, July 1–June 30	2,014	58.9
1923–24, July 1–June 30	2,097	60.2
1924–25, July 1–June 30	2,656	64.4
1925–26, July 1–June 30	2,757	65.1

	Farm real estate value	Calendar year	Average farm income, 15,000 farms
1920, Mar. 1	$107.89		
1921, Mar. 1	99.33		
1922, Mar. 1	85.26	1922	$917
1923, Mar. 1	82.25	1923	1,020
1924, Mar. 1	78.82	1924	1,205
1925, Mar. 1	77.83	1925	1,297
1926, Mar. 1	76.47		

AGRICULTURAL STATISTICS

UNITED STATES DEPARTMENT OF AGRICULTURE YEARBOOK, 1926

Prepared under the direction of the Statistical Committee: W. F. Callander, Lewis B. Flohr, Joseph A. Becker, and G. B. L. Arner

INTRODUCTION

Statistics of acreage, yield per acre, and production in the United States are estimates made by the Division of Crop and Livestock Estimates. For the year 1909, acreages are as reported by the Bureau of the Census; acreages in 1919 and in 1924 are based upon the census, (preliminary for 1924 in some States) supplemented by State enumerations. In the intercensal years, from 1911 to 1915, estimated acreages were obtained by applying estimated percentages of decrease or increase to the published acreage in the preceding year. The estimates from 1915 to 1918, from 1919 to 1923, and for 1925 and 1926 are based upon acreage changes from year to year as shown by a sample of approximately 2 per cent of the crop acreages in each year, supplemented by State enumerations. Yields per acre are estimates based upon reports of one or more farmers in each agricultural township on the average yield per acre in their localities. Production is acreage times yield per acre. Production estimates are in some cases revised in the following year on the basis of State enumerations and records of shipments.

Estimates of farm stocks, shipments, quality, crop condition, and miscellaneous information concerning crops are based either upon sample data or upon estimates of crop reporters for their localities. The sources of these data are indicated in the notes accompanying the tables.

Estimated prices received by producers on the specified dates are based upon reports of farmers and country dealers on the average price paid to farmers and do not relate to any specified grade. Farm value as shown is computed by applying the December 1 farm price to the total production. The average price received for the portion of the crop sold may be greater or less than this price, depending upon the price changes previous and subsequent to December 1 and the amount of the crop sold at the different prices.

Numbers of livestock on farms in 1910 correspond to the census enumeration as of April 15 in that year. The numbers on January 1, 1920 and 1925, are based upon the census enumeration (preliminary for 1925 in some States) as of that date, supplemented by enumerations by State agencies, such as assessors and brand inspection boards and by records of shipments during 1920 and 1925. In the intercensal years, from 1911 to 1916, the numbers of livestock were obtained by methods identical with those used for crop acreages. Estimates from 1917 to 1919, from 1920 to 1923, and for 1926 and 1927 are based upon a sample of approximately 2 per cent, supplemented by trends derived from assessors' enumerations, reports of brand inspection boards, market movements, and stockyard receipts. The census bases are not always comparable from one decade to another, due both to changes of dates and classifications.

The average value per head on January 1 is estimated from reports of correspondents relating to livestock in their vicinity. These are inventory values as distinguished from the monthly prices which relate to sales. The farm value on January 1 is computed by applying the average value per head to the number of head on farms.

Certain statistics represent enumerations made by the department in connection with the administration of regulatory and inspection laws. Certain other statistics represent enumerations made by the department in compliance with general legislation authorizing the collection and dissemination of information on agricultural products.

Statistics relating to supplies, movements, and market prices of agricultural products in the United States are derived from official sources as far as available; otherwise from reliable unofficial sources. In all cases wherein the data presented did not cover the field or a major sample thereof, data most representative of the various commodities, movements, and markets have been selected.

With some crops marketing and movement into consumptive channels takes place entirely within the calendar year in which the crop was produced. For many crops marketing takes place during portions of two calendar years. For a few crops, as potatoes, marketing extends beyond a 12-month period. In order that the movement and prices of the particular crop may be followed through, the months in which the crop moved have been used as the "year." Estimated prices received by producers are indices of price trends rather than prices actually received.

Weighted averages of prices are shown in all cases where a weighting factor was available. For instance, the weighted price of wheat in Chicago is based on the number of carload sales reported, which range from 42 to 55 per cent of all receipts on that market. In the case of hogs at Chicago, the weighted average price is based on total sales of butcher hogs to slaughterers. With many commodities, however, data as to quantities sold are unobtainable; in all such cases average prices are based on price quotations without reference to quantity.

It should be remembered that, due to changes in market conditions or quality of delivery in different years on or under the same grade description or specifications, prices derived from different sources may not be strictly comparable, although for most general purposes they are entirely satisfactory. For instance, the changes in the description of many kinds of livestock which were made July 1, 1925, while not affecting certain price series, made others only fairly comparable and made comparison impossible in other cases. The data as to commercial stocks and movements of various commodities are as nearly complete as practicable and feasible, and are considered fairly representative.

Data originating with other departments and agencies are included because of their general interest to the agricultural industry. The sources of such data are given in connection with the tables. Care has been taken to quote only such sources as are generally considered reliable.

Statistics of acreage and production in foreign countries are compiled as far as possible from official sources and are therefore subject to whatever errors may result from shortcomings in the reporting and statistical services of the various countries. Inaccuracies also result from differences in nomenclature and classification in foreign countries, and through the conversion of foreign units into domestic equivalents. Except where otherwise stated, pre-war data refer to pre-war boundaries. Yields per acre are calculated from acreage and production, both rounded to thousand units, and are therefore subject to a greater possibility of error when calculated for countries with small acreage.

The tables of international trade cover substantially the international trade of the world. The total imports and the total exports in any one year can not be expected to balance, although disagreements tend to be compensated over a series of years. Among the sources of disagreement are: The different periods covered by the "year" of various countries; imports received in the year subsequent to the year of export; lack of uniformity in classification of goods as among countries; different trade practices and varying degrees of failure in recording countries of origin and ultimate destination; different practices in recording reexported goods; and different methods of treating free ports. The exports given are domestic exports and the imports given are imports for consumption, whenever it is possible to distinguish such imports from general imports. While there are some inevitable omissions, there may be some duplication because of reshipments which do not appear as such in the official reports. In the trade tables, figures for the United States include Alaska, Porto Rico, and Hawaii, but not the Philippine Islands.

Since the statistics for the current year are in many cases preliminary and subject to revision on the basis of later and fuller information, the reader is cautioned to use always the figures as they appear in the latest issue of the Yearbook. For many commodities, long-time tables appear in the Statistical Bulletin series of the department. Current information gathered by the department may be found in the current issues of "Crops and Markets," "Foreign Crops and Markets," and in various mimeographed or multigraphed releases. Current information gathered by other governmental agencies and by private agencies may be found in the current issues of reports by those agencies.

STATISTICS OF GRAINS

WHEAT

TABLE 1.—*Wheat: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage harvested	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Farm value Dec. 1	Value per acre [1]	Chicago cash price per bushel No. 2 northern spring [2]: December: Low	December: High	Following May: Low	Following May: High	Domestic exports, including flour, fiscal year beginning July 1 [3 4]	Imports including flour, fiscal year beginning July 1 [3 4]	Per cent of crop exported
Aver.:	*1,000 acres*	*Bush. of 60 lbs.*	*1,000 bushels*	*Cents*	*1,000 dollars*	*Dollars*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Bushels*	*Bushels*	
1909–1913	47, 097	14. 7	690, 108	85. 7	591, 725	12. 56	97. 9	104. 7	99. 9	108. 6	107, 102, 812	1, 833, 979	15. 5
1914–1920	58, 205	14. 5	844, 605	156. 9	1, 325, 458	22. 77	180. 1	200. 2	202. 4	236. 2	257, 029, 794	19, 805, 596	30. 4
1921–1925	58, 092	13. 8	804, 151	110. 6	889, 049	15. 30	134. 3	154. 8	135. 6	155. 2	207, 236, 864	17, 470, 007	25. 8
1909	*44, 262*	15. 8	700, 434	98. 4	689, 108	15. 57	106	119¾	100	119¼	89, 172, 515	844, 568	12. 7
1910	45, 681	13. 9	635, 121	88. 3	561, 051	12. 28	104	110	98	106	71, 337, 64[illegible]	1, 174, 874	11. 2
1911	49, 543	12. 5	621, 338	87. 4	543, 063	10. 96	105	110	115	122	81, 890, [illegible]01	3, 445, 382	13. 2
1912	45, 814	15. 9	730, 267	76. 0	555, 280	12. 12	85	90¾	90½	96	145, 158, 558	1, 303, 551	19. 9
1913	50, 184	15. 2	763, 380	79. 9	610, 122	12. 16	89½	93	96	100	147, 954, 642	2, 401, 519	19. 4
1914	53, 541	16. 6	891, 017	98. 6	878, 680	16. 41	115	131	141	164½	335, 701, 528	728, 209	37. 7
1915	60, 469	17. 0	1, 025, 801	91. 9	942, 303	15. 58	106	128½	116	126	246, 221, 159	7, 253, 632	24 0
1916	52, 316	12. 2	636, 318	160. 3	1, 019, 968	19. 50	155½	190	258	340	205, 962, 484	24, 959, 926	32. 4
1917	45, 089	14. 1	636, 655	200. 8	1, 278, 112	28. 35	220	220	220	220	132, 578, 632	31, 215, 213	20. 8
1918	59, 181	15. 6	921, 438	204. 2	1, 881, 826	31. 80	220	220	245	280	287, 401, 578	11, 288, 591	31. 2
1919	75, 694	12. 8	967, 979	214. 9	2, 080, 056	27. 48	280	325	295	345	222, 029, 745	5, 511, 422	22. 9
1920	61, 143	13. 6	833, 027	143. 7	1, 197, 263	19. 58	164	187	142	178	369, 313, 430	57, 682, 179	44. 3
1921	63, 696	12. 8	814, 905	92. 6	754, 834	11. 85	118½	138	127	173	282, 566, 164	17, 375, 316	34. 7
1922	62, 317	13. 9	867, 598	100. 7	873, 412	14. 02	121	139¾	120¼	129¼	224, 899, 727	20, 030, 819	25. 9
1923	59, 659	13. 4	797, 394	92. 3	736, 006	12. 34	110	119½	111¼	130	159, 880, 348	28, 078, 825	20. 1
1924	52, 535	16. 5	864, 428	129. 9	1, 123, 086	21 38	156½	190	159½	175	260, 803, 019	6, 200, 768	30. 2
1925	52, 255	12. 9	676, 429	141 6	957, 907	18. 33	165⅝	186½	160⅛	169	108, 035, 062	15, 664, 306	16. 0
1926 [5]	56, 526	14. 7	832, 305	119 9	997, 589	17. 65	141¼	141¼	-----	---	----------	----------	------

Division of Crop and Livestock Estimates. Figures in italics are census returns.

[1] Based on price received by producers, Dec. 1.

[2] No. 1 northern spring to 1915. Chicago Daily Trade Bulletin

[3] Compiled from Foreign Commerce and Navigation of U. S. 1909–1918 and June issues of the Monthly Summaries of Foreign Commerce, 1919–1926

[4] Wheat flour converted to terms of grain on the following basis

July 1, 1908–June 30, 1917—1 barrel flour=the product 4.7 bushels grain.
July 1, 1917–June 30, 1919—1 barrel flour=the product 4.5 bushels grain.
July 1, 1919–June 30, 1920—1 barrel flour=the product 4.6 bushels grain.
July 1, 1920–June 30, 1926—1 barrel flour=the product 4.7 bushels grain.

[5] Preliminary.

TABLE 2.—*Winter and spring wheat: Acreage sown and harvested, production, and farm value, United States, 1910–1926*

Year	Winter wheat: Acreage sown in preceding fall	Winter wheat: Acreage harvested	Winter wheat: Average yield per acre	Winter wheat: Production	Winter wheat: Price per bushel received by producers Dec. 1	Winter wheat: Total farm value Dec. 1	Spring wheat: Acreage	Spring wheat: Average yield per acre	Spring wheat: Production	Spring wheat: Price per bushel received by producers Dec. 1	Spring wheat: Total farm value Dec. 1
	1,000 acres	*1,000 acres*	*Bush.*	*1,000 bushels*	*Cents*	*1,000 dollars*	*1,000 acres*	*Bush.*	*1,000 bushels*	*Cents*	*1,000 dollars*
1910	31, 659	27, 329	15. 9	434, 142	88. 1	382, 318	18, 352	11. 0	200, 979	88. 9	178, 733
1911	32, 648	29, 162	14. 8	430, 656	88 0	379, 151	20, 381	9. 4	190, 682	86 0	163, 912
1912	33, 229	26, 571	15. 1	399, 919	80. 9	323, 572	19, 243	17. 2	330, 348	70. 1	231, 708
1913	33, 274	31, 699	16. 5	523, 561	82. 9	433, 995	18, 485	13. 0	239, 819	73. 4	176, 127
1914	37, 158	36, 008	19. 0	684, 990	98 6	675, 623	17, 533	11. 8	206, 027	98. 6	203, 057
1915	42, 431	41, 308	16. 3	673, 947	94. 7	638, 149	19, 161	18. 4	351, 854	86. 4	304, 154
1916	39, 245	34, 709	13. 8	480, 553	162. 7	781, 906	17, 607	8 8	155, 765	152. 8	238, 062
1917	38, 359	27, 257	15. 1	412, 901	202. 8	837, 237	17, 832	12. 5	223, 754	197. 0	440, 875
1918	43, 126	37, 130	15. 2	565, 099	206. 3	1, 165, 995	22, 051	16. 2	356, 339	200. 9	715, 831
1919	51, 483	50, 494	15. 1	760, 377	210 5	1, 600, 805	25, 200	8 2	207, 602	230. 9	479, 251
1920	44, 861	40, 016	15. 3	610, 597	148. 6	907, 291	21, 127	10. 5	222, 430	130. 4	289, 972
1921	45, 625	43, 414	13. 8	600, 316	95. 1	571, 044	20, 282	10. 6	214, 589	85. 6	183, 790
1922	47, 930	42, 358	13. 8	586, 878	104. 7	614, 399	19, 959	14. 1	280, 720	92. 3	259, 013
1923	46, 091	39, 508	14. 5	571, 777	95. 1	543, 530	20, 151	11. 2	225, 617	85. 3	192, 476
1924	38, 916	35, 656	16. 6	592, 259	131 6	779, 548	16, 879	16. 1	272, 169	126. 2	343, 538
1925	39, 848	31, 234	12. 9	401, 734	147. 9	594, 289	21, 021	13. 1	274, 695	132. 4	363, 618
1926 [1]	39, 799	36, 913	17. 0	626, 929	121. 2	759, 870	19, 613	10. 5	205, 376	115. 7	237, 719

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 3.—*Wheat: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

tate	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
	5	4	7	6	130	104	196	120
	4	1	2	2	84	21	42	40
k	403	327	308	279	8, 159	6, 117	5, 998	4, 887
y	74	54	56	60	1, 480	999	1, 176	1, 320
ania	1, 283	1, 136	1, 125	1, 170	24, 338	18, 744	22, 500	23, 400
	2, 350	1, 857	1, 616	1, 795	42, 783	33, 446	24, 304	40, 384
	2, 076	1, 704	1, 772	1, 703	34, 248	28, 972	25, 700	34, 048
	3, 479	2, 363	2, 290	2, 283	62, 506	37, 988	36, 880	41, 034
	976	840	856	984	16, 576	20, 132	14, 557	17, 998
l	119	116	113	128	1, 970	2, 786	2, 267	2, 599
a	1, 840	1, 716	2, 263	2, 154	23, 385	37, 863	30, 269	27, 860
	731	452	388	376	13, 558	9, 142	6, 303	7, 864
	2, 830	1, 607	1, 704	1, 403	36, 790	21, 388	22, 515	21, 474
kota	9, 650	8, 500	9, 605	9, 653	71, 410	133, 450	112, 378	77, 224
kota	2, 870	2, 408	2, 701	1, 917	27, 515	35, 157	31, 835	10, 840
	3, 174	3, 061	2, 676	3, 077	31, 388	58, 519	34, 150	40, 085
	8, 299	9, 817	8, 601	10, 147	83, 804	159, 964	77, 388	150, 084
	106	100	102	103	1, 908	1, 780	1, 887	2, 060
l	600	500	495	520	11, 520	7, 900	10, 395	11, 960
	838	630	630	687	11, 145	8, 442	8, 946	11, 336
ginia	228	122	134	147	2, 964	1, 586	1, 809	2, 352
rolina	544	414	406	447	6, 038	4, 968	4, 466	6, 303
rolina	175	57	46	50	1, 925	627	506	800
	189	76	99	114	1, 739	722	1, 040	1, 710
	620	200	230	258	7, 688	2, 060	3, 220	4, 773
	443	310	367	394	4, 519	3, 255	4, 588	7, 092
	15	6	7	7	150	60	77	94
pi	4	5	5	6	60	62	90	102
	70	33	30	30	770	380	390	405
a	3, 450	3, 684	3, 316	4, 214	37, 950	58, 944	27, 191	73, 745
	1, 559	1, 365	819	1, 802	16, 370	25, 252	6, 552	32, 796
	3, 274	3, 163	3, 250	3, 595	47, 708	51, 799	35, 021	44, 665
	1, 052	827	926	1, 045	30, 115	16, 059	26, 042	24, 633
	175	141	155	180	2, 785	2, 141	2, 720	3, 378
	1, 407	1, 360	1, 156	1, 463	18, 272	19, 520	14, 652	18, 452
ico	108	215	80	249	1, 300	3, 050	492	5, 653
	42	32	32	38	1, 092	672	736	950
	272	201	233	237	6, 566	3, 313	6, 094	5, 505
	20	14	15	17	507	316	456	408
on	2, 446	1, 850	2, 072	2, 107	61, 215	26, 380	40, 251	40, 271
	1, 111	890	964	1, 026	26, 807	14, 693	18, 893	19, 586
	748	377	603	653	16, 157	5, 655	11, 457	12, 015
d States	59, 659	52, 535	52, 255	56, 526	797, 394	864, 428	676, 429	832, 305

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 4.—*Winter and spring wheat: Acreage sown and harvested, production, and farm value, December 1, by States, 1926* [1]

State	Winter wheat						Spring wheat [2]				
	Acreage sown in preceding fall	Acreage harvested	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Total farm value Dec. 1	Acreage	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Total farm value Dec. 1
	1,000 acres	*1,000 acres*	*Bush.*	*1,000 bushels*	*Cents*	*1,000 dollars*	*1,000 acres*	*Bush.*	*1,000 bushels*	*Cents*	*1,000 dollars*
Maine							6	20. 0	120	175	210
Vermont							2	20 0	40	132	53
New York	293	270	17. 5	4, 725	132	6, 237	9	18. 0	162	128	207
New Jersey	62	60	22. 0	1, 320	132	1, 742					
Pennsylvania	1, 194	1, 170	20. 0	23, 400	129	30, 186					
Ohio	1, 844	1, 789	22. 5	40, 252	127	51, 120	6	22. 0	132	126	166
Indiana	1, 749	1, 697	20. 0	33, 940	124	42, 086	6	18. 0	108	120	130
Illinois	2, 277	2, 163	18. 0	38, 934	122	47, 499	120	17. 5	2, 100	122	2, 562
Michigan	1, 053	979	18. 3	17, 916	122	21. 858	5	16. 5	82	122	100
Wisconsin	72	65	20 6	1, 339	125	1, 674	63	20 0	1. 260	126	1, 588
Minnesota	201	187	17. 5	3, 272	120	3. 926	1, 967	12. 5	24, 588	123	30, 243
Iowa	354	340	21. 5	7, 310	120	8, 772	36	15. 4	554	119	659
Missouri	1, 472	1, 391	15 3	21, 282	124	26, 390	12	16. 0	192	125	240
North Dakota							9, 653	8. 0	77, 224	117	90, 352
South Dakota	94	75	7 0	525	115	604	1, 842	5. 6	10, 315	118	12, 172
Nebraska	3, 274	2, 881	12 9	37, 165	117	43, 483	196	14. 9	2, 920	112	3, 270
Kansas	11, 392	10, 139	14 8	150, 057	119	178, 508	8	3. 4	27	115	31
Delaware	105	103	20. 0	2, 060	130	2, 678					
Maryland	528	520	23 0	11, 960	130	15, 548					
Virginia	697	687	16. 5	11, 336	131	14, 850					
West Virginia	148	147	16. 0	2. 352	135	3, 175					
North Carolina	456	447	14. 1	6, 303	143	9, 013					
South Carolina	51	50	16. 0	800	155	1. 240					
Georgia	118	114	15. 0	1, 710	150	2. 565					
Kentucky	265	258	18. 5	4, 773	133	6, 348					
Tennessee	401	394	18. 0	7, 092	136	9, 645					
Alabama	7	7	13. 5	94	160	150					
Mississippi	8	6	17 0	102	130	133					
Arkansas	31	30	13. 5	405	128	518					
Oklahoma	4, 300	4, 214	17. 5	73, 745	118	87. 019					
Texas	1, 858	1, 802	18. 2	32, 796	120	39. 355					
Montana	560	448	14. 0	6, 272	107	6, 711	3, 147	12 2	38, 393	113	43, 384
Idaho	476	447	23 0	10, 281	108	11, 103	598	24. 0	14. 352	105	15, 070
Wyoming	44	42	18. 0	756	107	809	138	19. 0	2, 622	107	2, 806
Colorado	1, 509	1, 207	12 0	14, 484	108	15, 643	256	15 5	3. 968	104	4, 127
New Mexico	219	212	23 0	4, 876	110	5, 364	37	21 0	777	113	878
Arizona	39	38	25. 0	950	130	1, 235					
Utah	152	149	21. 0	3, 129	107	3. 348	88	27. 0	2. 376	102	2, 424
Nevada	5	5	24. 0	120	110	132	12	24 0	288	118	340
Washington	882	847	23. 0	19, 481	115	22. 403	1. 260	16. 5	20. 790	117	24, 324
Oregon	907	880	20. 0	17, 600	120	21, 120	146	13. 6	1. 986	120	2, 383
California	702	653	18. 4	12, 015	130	15, 620					
United States	39, 799	36, 913	17 0	626, 929	121 2	759, 870	19, 613	10 5	205, 376	115. 7	237, 719

Division of Crop and Livestock Estimates.

[1] Preliminary.

[2] Including durum.

TABLE 5.—*Wheat: Yield per acre, by States, 1921–1926*

State	Av., 1921–1925	1921	1922	1923	1924	1925	1926
	Bu.	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*
Me	24.4	17.0	25.0	26.0	26.0	28.0	20.0
Vt	19.6	14.0	21.0	21.0	21.0	21.0	20.0
N. Y	19.4	19.2	19.4	20.2	18.7	19.5	17.5
N. J	19.7	19.0	20.0	20.0	18.5	21.0	22.0
Pa	18.3	17.5	18.5	19.0	16.5	20.0	20.0
Ohio	15.5	12.4	14.0	18.2	18.0	15.0	22.5
Ind	14.9	12.0	14.5	16.5	17.0	14.5	20.0
Ill	16.7	16.1	17.3	18.0	16.1	16.1	18.0
Mich	17.5	15.7	14.0	17.0	24.0	17.0	18.3
Wis	18.2	13.1	17.1	16.6	24.0	20.1	20.3
Minn	14.3	9.7	13.7	12.7	22.1	13.4	12.9
Iowa	19.1	17.9	22.5	18.5	20.2	16.2	20.9
Mo	12.6	10.9	12.5	13.0	13.3	13.2	15.3
N. Dak	11.5	8.5	14.1	7.4	15.7	11.7	8.0
S. Dak	11.7	9.1	13.4	9.6	14.6	11.8	5.7
Nebr	14.2	15.1	14.3	9.9	19.1	12.8	13.0
Kans	12.0	12.2	12.6	10.1	16 3	9.0	14.8
Del	16.4	11.5	16.2	18.0	17.8	18.5	20.0
Md	17.3	14 0	16.5	19.2	15.8	21.0	23.0
Va	12 6	9.8	12.5	13.3	13.4	14.2	16.5
W. Va	12.7	12.5	11.5	13.0	13 0	13.5	16.0
N. C	10 1	7.5	9.0	11 1	12 0	11.0	14.1
S. C	10.4	11.0	8.0	11.0	11.0	11.0	16.0
Ga	9.5	10.5	8.0	9.2	9.5	10.5	15.0
Ky	11.6	10.0	11.5	12.4	10.3	14.0	18.5
Tenn	10.5	10.0	9.5	10.2	10.5	12.5	18.0
Ala	10.5	10.5	10.9	10.0	10.0	11.0	13.4
Miss	14.3	14.0	12.0	15.0	12.4	18.0	17.0
Ark	11.6	9.3	13.0	11.0	11.5	13.0	13.5
Okla	11.4	12.5	9.5	11.0	16.0	8.2	17.5
Tex	11.0	10.0	8.0	10.5	18.5	8.0	18.2
Mont	13.7	12.3	14.6	14.6	16.4	10.8	12.4
Idaho	24.3	24.0	21.6	28.6	19.4	28.1	23.6
Wyo	16.0	17.2	14.0	15.9	15.2	17.5	18.8
Colo	13.4	13.5	13.4	13.0	14.4	12.7	12.6
N. Mex	10.9	13.6	8.4	12.0	14.2	6.2	22.7
Ariz	23.4	21.0	26.0	26.0	21.0	23.0	25.0
Utah	21.8	22.8	19.3	24.1	16.5	20.2	23.2
Nev	25.6	23.5	26.2	25.4	22.6	30.4	24.0
Wash	18.9	22.8	12.9	25.0	14.3	19.4	19.1
Oreg	20.2	23.4	17.3	24.1	16.5	19.6	19.1
Calif	18.4	15.0	21.5	21.6	15.0	19.0	18.4
U. S	13.9	12.8	13.9	13.4	16.5	12.9	14.7

Division of Crop and Livestock Estimates.

TABLE 6.—*Durum wheat:*[1] *Acreage harvested, yield per acre, and production, by States, 1917–1926*

State and year	Acreage harvested	Average yield per acre	Production
	1,000 acres	*Bushels*	*1,000 bushels*
Minnesota.			
1917	100	15 5	1,557
1918	123	20 0	2,460
1919	125	11.9	1,485
1920	115	12 0	1,383
1921	147	11 9	1,754
1922	248	16.0	3,960
1923	225	12.7	2,858
1924	126	21.5	2,709
1925	146	15.2	2,219
1926 [2]	234	14.0	3,276
North Dakota:			
1917	1,574	9.0	14,168
1918	2,204	14 0	30,856
1919	2,749	7.9	21,720
1920	3,210	10.5	33,702
1921	3,788	9.7	36,741
1922	4,026	15.0	60,397
1923	3,667	9.1	33,370
1924	2,757	16.3	44,939
1925	3,170	14.6	46,282
1926 [2]	3,804	9.5	36,138
South Dakota:			
1917	573	15.6	8,941
1918	636	19.5	12,403
1919	699	9.8	6.848
1920	716	12.4	8,884
1921	961	11.0	10.570
South Dakota—Continued.			
1922	1,239	15.5	19,206
1923	1,275	12.0	15,300
1924	865	15 4	13,321
1925	900	13.9	12,510
1926 [2]	765	6.4	4,896
Montana:			
1917	149	9 0	1,343
1918	350	12.9	4,516
1919	209	4.5	943
1920	368	11.5	4,231
1921	380	11.2	4,259
1922	279	14.7	4,106
1923	128	10.2	1,306
1924	78	18.0	1,404
1925	64	10.0	640
1926 [2]	60	8.6	516
Total, 4 States:			
1917	2,397	10.9	26,009
1918	3,313	15.2	50,235
1919	3,782	8.2	30,996
1920	4,409	10.9	48,200
1921	5,276	10.1	53,324
1922	5,792	15.1	87,669
1923	5,295	10 0	52,834
1924	3,826	16.3	62,373
1925	4,280	14.4	61,651
1926 [2]	4.863	9.2	44.826

Division of Crop and Livestock Estimates.

[1] Included in spring wheat in Table 4.

[2] Preliminary.

TABLE 7.—*Winter wheat: Percentage of acreage abandoned, 1921–1926* [1]

State	Av., 1921–1925	1921	1922	1923	1924	1925	1926	State	Av., 1921–1925	1921	1922	1923	1924	1925	1926
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*		*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
N. Y.	2.8	2.0	2.5	3.2	3.8	2.5	8.0	Ky.	11.0	3.5	3.0	3.5	32.0	13.0	2.5
N. J.	2.8	1.8	3.0	3.0	4.0	2.0	3.0	Tenn.	5.7	2.0	4.0	2.5	14.0	6.0	1.7
Pa.	2.1	1.0	2.0	2.5	3.0	2.0	2.0	Ala.	10.4	5.0	8.0	7.0	26.0	6.0	3.0
Ohio	9.9	2.0	2.0	12.5	10.0	23.0	3.0	Miss.	26.4	20.0	14.0	8.0	50.0	40.0	20.0
Ind.	6.1	3.0	4.0	6.0	7.0	10.4	3.0	Ark.	5.3	4.0	3.5	4.0	5.0	10.0	3.0
Ill.	5.8	2.3	5.0	5.5	13.0	3.0	5.0	Okla.	10.6	4.0	16.0	9.0	4.0	20.0	2.0
Mich.	2.5	2.5	2.0	4.5	2.0	1.5	7.0	Tex.	20.2	4.0	30.0	8.0	5.0	54.0	3.0
Wis.	12.2	10.0	14.0	4.0	3.0	30.0	10.0	Mont.	28.2	25.0	18.0	18.0	10.0	70.0	20.0
Minn.	9.8	7.0	6.0	15.0	5.0	16.0	7.0	Idaho	7.5	3.0	4.5	4.0	11.0	15.0	6.0
Iowa	4.0	1.0	2.0	5.0	3.0	9.0	4.0	Wyo.	12.0	8.0	10.0	17.0	10.0	15.0	4.0
Mo.	4.6	2.0	4.0	1.8	11.0	4.0	5.5	Colo.	22.7	8.0	29.6	33.0	10.0	33.0	20.0
S. Dak.	17.7	7.5	6.0	40.0	10.0	25.0	20.0	N. Mex.	42.0	10.0	60.0	50.0	10.2	80.0	3.0
Nebr.	11.2	2.0	5.0	25.0	5.0	19.0	12.0	Ariz.	6.6	10.0	10.0	8.0	2.0	3.0	2.0
Kans.	16.1	8.0	20.7	28.0	4.0	20.0	11.0	Utah	3.1	4.0	2.0	2.5	5.0	2.0	2.0
Del.	2.9	2.5	2.5	3.0	5.0	1.5	2.0	Nev.	3.0	8.0	1.0	2.0	2.0	2.0	0
Md.	2.5	2.0	2.0	3.2	4.0	1.5	1.5	Wash.	21.8	2.0	7.0	5.0	25.0	70.0	4.0
Va.	2.7	2.2	1.5	2.5	5.2	2.0	1.5	Oreg.	16.2	1.0	4.0	3.0	8.0	65.0	3.0
W. Va.	4.9	1.5	1.5	3.5	8.0	10.0	1.0	Calif.	24.6	28.0	8.0	8.0	54.0	25.0	7.0
N. C.	2.4	2.0	1.5	2.0	5.0	1.5	2.0								
S. C.	4.7	2.5	10.0	2.0	5.0	4.0	2.5	U. S.	12.1	4.8	11.6	14.3	8.4	21.6	7.3
Ga.	12.9	3.5	9.0	5.0	42.0	5.0	3.0								

Division of Crop and Livestock Estimates.

[1] For entire season, planting to harvest Includes winter abandonment, which is estimated on May 1 of each season.

TABLE 8.—*Wheat: World production, 1909–1926*

Year	Production for countries reporting all years	World production, excluding Russia and China, preliminary estimate	Total Europe, excluding Russia, preliminary estimate	Selected countries: Russia [1]	United States	France	Italy	India	Argentina	Australia	Canada
	Million bushels	*Million bushels*	*Million bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
1909	2,439	2,819	1,240	846,165	700,434	359,174	190,378	285,197	131,010	90,414	166,744
1910	2,293	2,777	1,201	836,242	635,121	252,963	153,403	359,647	145,981	95,112	132,049
1911	2,552	3,043	1,347	563,485	621,338	322,339	192,395	375,629	166,190	71,636	230,924
1912	2,616	3,093	1,284	801,497	730,267	334,333	165,720	370,515	187,391	91,981	224,159
1913	2,656	3,098	1,301	1,027,662	763,380	319,370	214,772	368,219	104,723	103,344	231,717
1914	2,485	2,834	1,072	[2] 833,639	891,017	282,689	169,582	312,368	169,166	24,892	161,280
1915	3,075	3,497	1,125	[3] 826,784	1,025,801	222,776	170,541	376,992	169,019	179,066	393,543
1916	2,332	2,734	1,049	[4] 531,009	636,318	204,908	176,530	323,045	84,121	152,420	262,781
1917	2,322	2,574	740	[4] 622,404	636,655	[5] 134,575	139,999	382,144	234,818	114,734	233,743
1918	2,641	2,891	909	----------	921,438	[5] 228,688	183,294	370,421	180,182	75,638	189,075
1919	2,511	2,821	899	----------	967,979	[5] 187,091	169,769	280,261	216,954	45,975	193,260
1920	2,603	2,948	949	320,460	833,027	[5] 236,929	142,312	377,888	156,133	145,874	263,189
1921	2,734	3,169	1,216	[4] 204,837	814,905	[5] 323,467	[5] 194,071	250,357	191,012	129,089	300,858
1922	2,789	3,225	1,044	[4] 242,762	867,598	[5] 243,315	[5] 161,641	366,987	195,842	109,455	399,786
1923	3,047	3,551	1,257	[4] 248,737	797,394	[5] 275,569	[5] 224,836	372,363	247,807	124,993	474,199
1924	2,719	3,145	1,053	[5] 713,047	864,428	[5] 281,179	[5] 170,144	360,640	191,138	164,559	262,097
1925	2,856	3,400	1,402	[5] 809,649	676,429	[5] 330,340	[5] 240,844	330,997	191,140	113,443	411,376
1926 [6]	2,928	3,441	1,231	----------	832,305	[5] 248,604	[5] 220,642	324,949	222,800	164,000	405,814

Division of Statistical and Historical Research. For each year is shown the production during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere. Estimates of world wheat production for the period 1890–1908 appear in Agriculture Yearbook, 1924, p. 569.

[1] Includes all Russian territory reporting for years named.

[2] Total Russian Empire exclusive of the 10 Vistula Provinces of Russian Poland and the Province of Batum in Transcaucasia.

[3] Exclusive of Russian Poland, Lithuania, parts of present Latvia and Ukraine, and 2 Provinces of Transcaucasia.

[4] Estimated production within present boundaries of the Union of Socialist Soviet Republics, excluding Turkestan, Transcaucasia, and the Far East, which regions in 1924 produced 51,706,000 bushels, and in 1925, 58,000,000 bushels.

[5] Production within postwar boundaries and therefore not comparable with earlier years.

[6] Preliminary.

TABLE 9.—*Wheat: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*

Country	Acreage					Yield per acre					Production				
	Average, 1909–1913 [1]	Average, 1921–1925	1924	1925	1926, preliminary	Average, 1909–1913 [1]	Average, 1921–1925	1924	1925	1926, preliminary	Average, 1909–1913 [1]	Average, 1921–1925	1924	1925	1926, preliminary
NORTHERN HEMISPHERE															
NORTH AMERICA	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	Bush.	Bush.	Bush.	Bush.	Bush.	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Canada	9,945	22,520	22,056	21,973	22,767	19.8	16.4	11.9	18.7	17.8	197,119	369,663	262,097	411,376	405,814
United States	47,097	58,092	52,535	52,255	56,526	14.7	13.8	16.5	12.9	14.7	690,108	804,151	864,428	676,429	832,305
Mexico	[2] 2,174	2,104	1,404	1,161	1,321	[2] 5.3	5.0	7.4	8.1	7.8	[3] 11,481	10,434	10,357	9,440	10,244
Guatemala		[3] 25	33	22			[3] 7.5	6.9				[3] 188	228	150	
Total countries reporting all years shown	59,216	82,716	75,995	75,389	80,614	15.2	14.3	15.0	14.6	15.5	898,708	1,184,248	1,136,882	1,097,245	1,248,363
EUROPE															
United Kingdom:															
England and Wales	1,787	1,746	1,545	1,500	1,592	31.2	32.9	32.9	33.8	31.1	55,770	57,524	50,885	50,773	49,504
Scotland	57	57	49	49	53	39.9	39.5	37.3	41.1	38.6	2,273	2,251	1,829	2,016	2,048
Ireland	43	37	38	26		37.1	33.6	31.4	33.8		1,597	1,242	1,192	880	
Norway	12	27	21	22	22	25.5	23.6	23.4	22.3	27.1	306	637	493	490	597
Sweden	255	352	322	363	381	31.8	30.4	21.1	38.0	31.7	8,103	10,689	6,800	13,791	12,063
Denmark	154	202	149	198	249	41.1	44.4	39.4	49.2	35.4	6,322	8,973	5,864	9,748	8,818
Netherlands	138	148	118	138	132	36.1	42.4	39.9	41.6	36.5	4,976	6,277	4,706	5,743	4,813
Belgium	404	339	340	365	343	37.6	38.9	38.2	39.7	35.7	15,199	13,193	13,004	14,477	12,228
Luxemburg	27	23	22	27	28	22.8	17.0	14.2	20.5	22.6	615	392	312	553	633
France	16,500	13,507	13,620	13,872	13,499	19.7	21.5	20.6	23.8	18.4	325,644	290,774	281,179	330,340	248,604
Spain	9,547	10,457	10,379	10,722	10,686	13.7	13.6	11.7	15.2	14.7	130,446	142,420	121,778	162,591	157,339
Portugal	[4] 1,211	[4] 1,062	945			[5] 9.8	[5] 10.1	11.1			[5] 11,850	[5] 10,749	10,534	11,478	8,418
Italy	11,793	11,575	11,283	11,673	12,146	15.6	17.1	15.1	20.6	18.2	184,393	198,307	170,144	240,844	220,642
Switzerland	105	105	104	105	127	31.6	32.0	29.9	33.5	31.7	3,314	3,364	3,112	3,516	4,027
Germany	4,029	3,613	3,623	3,835	3,956	32.6	27.3	24.6	30.8	24.1	131,274	98,714	89,199	118,213	95,422
Austria	635	456	482	484	490	20.2	18.4	17.6	22.0	20.4	12,813	8,400	8,490	10,671	9,975
Czechoslovakia	1,718	1,523	1,497	1,526	1,546	22.0	23.6	21.5	25.8	23.1	37,879	36,015	32,238	39,309	35,673
Hungary	3,712	3,350	3,499	3,523	3,661	19.3	17.8	14.7	20.3	18.9	71,493	59,678	51,568	71,674	69,200
Yugoslavia	3,982	3,968	4,244	4,382	4,177	15.6	14.8	13.6	17.9	17.1	62,024	58,753	57,770	78,646	71,421
Greece	[5] 1,134	1,035	1,034	1,065		[5] 14.4	9.8	8.0	13.3		[5] 16,273	10,116	8,252	14,190	11,159
Bulgaria	2,409	2,358	2,492	2,537	2,587	15.7	15.1	9.9	19.6	15.9	37,823	35,501	24,698	49,643	41,064
Rumania	[3] 9,515	7,068	7,838	8,157	8,222	[3] 16.7	12.7	9.0	12.8	13.5	[3] 158,672	89,570	70,420	104,741	110,891
Poland	3,350	2,507	2,651	2,703	2,739	19.0	17.5	12.3	21.4	17.2	63,675	43,987	32,497	57,915	47,068
Lithuania	211	214	210	277	303	15.5	16.6	15.8	19.1	14.3	3,264	3,563	3,319	5,285	4,335

atvia	85	89	106	119	122	17.4	16.0	14.9	18.2	15.2	1,475	1,426	1,582	2,165	1,860
stonia	23	47	44	51	59	15.8	14.2	12.3	15.5	14.3	364	667	543	791	844
nland	8	36	37	38	38	17.1	20.5	21.4	24.4	18.5	137	739	790	929	703
ussia, European	57,420	27,479	33,200	36,561		10.6	9.2	7.4	14.3		607,828	251,817	246,927	[6] 519,811	[6] 590,234
Total European countries reporting acreage and production all years shown	70,456	63,767	64,675	66,666	67,158	18.7	18.4	16.0	20.6	18.0	1,318,254	1,171,814	1,033,220	1,374,864	1,209,772
Estimated European total excluding Russia	72,800	65,900	66,700	68,800	69,300						[7] 1,348,000	1,194,000	1,053,000	1,402,000	1,231,000
AFRICA															
Morocco	(1,700)	2,272	2,461	2,621	2,690		9.6	11.6	9.1	6.7	(17,000)	21,741	28,660	23,883	18,078
Algeria	3,521	3,400	3,492	3,608	3,720	10.0	7.8	4.9	9.1	6.1	35,161	26,679	17,156	32,670	22,867
Tunis	1,310	1,391	1,159	1,625	1,838	4.8	5.7	4.5	7.2	7.1	6,224	7,899	5,181	11,758	13,044
Egypt	1,314	1,462	1,416	1,380	1,532	25.6	25.3	24.1	26.3	24.3	33,662	36,949	34,186	36,247	37,207
Total	7,845	8,525	8,528	9,234	9,780	11.7	10.9	10.0	11.3	9.3	92,047	93,268	85,183	104,558	91,196
ASIA															
Turkey		[5] 4,338	4,338				[5] 9.1	9.1				[5] 39,510	39,510		
Cyprus	162	191	190	183		13.7	12.0	9.7	11.4		2,216	2,292	1,851	2,079	
India	29,224	29,560	31,181	31,774	30,470	12.0	11.4	11.6	10.4	10.7	351,841	336,269	360,640	330,997	324,949
Russia (Asiatic)	16,789	[2] 14,803	12,858	16,748		9.0	[2] 10.6	10.5	11.5		151,113	[2] 156,890	134,814	[6] 193,236	[6] 219,415
Japan	1,179	1,197	1,149	1,149	1,141	21.3	23.6	23.5	25.7	24.9	25,088	28,195	26,967	29,541	28,403
Chosen	574	874	844	887		12.0	11.7	12.2	11.8		6,898	10,208	10,289	10,509	10,518
Formosa	15	7	3	2		11.3	9.1	7.7	10.5		169	64	23	21	
Kwantung	[4] 4	[3] 4	4			[4] 10.0	[3] 12.5	10.0			[4] 40	[3] 50	40		
Total Asiatic countries reporting acreage and production all years shown	30,403	30,757	32,330	32,923	31,611	12.4	11.8	12.0	11.0	11.2	376,929	364,464	387,607	360,538	353,352
Estimated Asiatic total excluding Russia and China	37,600	37,700	38,900	40,200	37,600						419,060	435,990	457,860	432,450	425,190
Total Northern Hemisphere reporting acreage and production all years shown	167,920	185,765	181,528	184,212	189,163	16.0	15.1	14.6	15.9	15.3	2,685,938	2,813,794	2,642,892	2,937,205	2,902,683
Estimated Northern Hemisphere total excluding Russia and China	177,500	195,000	190,300	193,700	197,500						2,[illegible]59,000	2,909,000	2,735,000	3,038,000	2,997,000

[1] Where changes in boundary have occurred, averages are estimates for territory within present boundaries.
[2] Two-year average.
[3] Four-year average.
[4] Three-year average.
[5] One year only.
[6] Revised estimates for all Russia distributed between European and Asiatic territory in the same ratio as the preliminary estimate.
[7] The estimate for the 5-year period, 1909-1913, given in this table is somewhat larger than the figures obtained by averaging those 5 years in Table 9. This is because in the detailed table estimates for warring countries are for post-war boundaries, whereas in Table 9 they are for pre-war territory. As a result in excluding Russia, which lost territory in the war, a smaller area is excluded in the detailed table than in Table 9.

TABLE 9.—*Wheat: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*—Continued

Country	Acreage: Average, 1909–1913 [1]	Acreage: Average, 1921–1925	Acreage: 1924	Acreage: 1925	Acreage: 1926, preliminary	Yield per acre: Average, 1909–1913 [1]	Yield per acre: Average, 1921–1925	Yield per acre: 1924	Yield per acre: 1925	Yield per acre: 1926, preliminary	Production: Average, 1909–1913 [1]	Production: Average, 1921–1925	Production: 1924	Production: 1925	Production: 1926, preliminary
SOUTHERN HEMISPHERE															
Brazil		[3] 249	223				[3] 15.0	17.5				[3] 3,723	3,902		
Chile	1,003	1,457	1,429	1,503	1,502	20.0	17.8	17.1	18.3		20,062	25,920	24,470	27,469	
Uruguay	791	867	850	954	853	8.2	11.2	11.7	10.5		[3] 6,517	9,680	9,908	10,024	
Argentina	16,051	16,936	17,792	19,198	19,275	9.2	12.0	10.7	10.0	11.2	147,059	203,388	191,138	191,140	222,850
Union of South Africa	[5] 803	884	741	1,058		[5] 7.5	8.2	9.6	7.9		[5] 6,034	7,286	7,144	8,333	8,010
Southern Rhodesia		[3] 5	3	5			[3] 6.2	6.0	7.6			[3] 31	18	38	
Australia	7,603	10,005	10,825	10,175	11,000	11.9	12.8	15.2	11.1	14.1	90,497	128,308	164,559	113,443	164,000
New Zealand	241	224	167	152	220	28.7	29.6	32.6	30.4		6,925	6,640	5,448	4,617	
Total Southern Hemisphere countries reporting acreage and production all years shown	23,654	26,941	28,617	29,373	30,275	10.0	12.3	12.4	10.4	12.5	237,556	331,696	365,697	304,583	386,850
Estimated Southern Hemisphere total	26,700	30,900	32,400	33,600	34,500						282,000	389,000	410,000	362,000	437,000
Total Northern and Southern Hemisphere countries reporting acreage and production all years shown	191,574	212,706	210,145	213,585	219,438	15.3	14.8	14.3	15.2	15.0	2,923,494	3,145,490	2,998,589	3,241,786	3,280,453
Estimated world total excluding Russia and China	204,200	225,900	222,700	227,300	232,000						[7] 3,041,000	3,298,000	3,145,000	3,400,000	3,441,000

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture. Figures in parenthesis denote unofficial estimates, interpolation, etc. For each year is shown the harvest during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere.

[1] Where changes in boundary have occurred, averages are estimates for territory within present boundaries.

[3] Four-year average.

[5] One year only.

[7] The estimate for the 5-year period, 1909–1913, given in this table is somewhat larger than the figures obtained by averaging those 5 years in Table 9. This is because in the detailed table estimates for warring countries are for post-war boundaries, whereas in Table 9 they are for pre-war territory. As a result in excluding Russia, which lost territory in the war, a smaller area is excluded in the detailed table than in Table 9.

TABLE 10.—*Wheat: Monthly marketings by farmers, as reported by about 3,500 mills and elevators, United States, 1917–1925*

Year beginning July	Percentage of year's receipts												
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Season
1917	7.4	12.4	19.3	18.0	13.7	7.6	4.7	3.9	3.7	4.1	3.1	2.1	100.0
1918	17.6	19.9	18.0	13.8	8.7	7.3	4.6	3.1	2.0	1.6	1.9	1.5	100.0
1919	17.1	23.2	15.6	11.1	7.5	5.7	4.2	3.0	2.9	3.1	3.4	3.2	100.0
1920	12.1	14.3	15.9	10.6	6.9	6.2	5.5	5.3	4.9	5.0	6.4	6.9	100.0
1921	10.1	18.2	16.4	10.6	6.8	5.4	4.4	4.9	3.9	3.2	3.5	3.6	100.0
1922	14.8	17.3	14.2	12.0	8.6	7.4	5.5	5.1	4.3	3.7	3.4	3.7	100.0
1923	13.4	17.6	16.7	13.7	9.5	6.2	4.6	4.8	3.3	2.9	3.7	3.6	100.0
1924	13.6	19.8	17.5	14.5	8.6	5.6	5.3	4.2	2.5	1.6	3.1	3.7	100.0
1925	14.7	18.8	18.4	10.6	8.6	7.0	4.7	4.0	3.1	3.0	3.0	4.1	100.0

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TABLE 11.—*Wheat: Supply and distribution and per capita disappearance in the United States*

[Thousands of bushels, i. e., 000 omitted]

Item	Year beginning July							
	Average, 1899–1908	Average, 1909–1913	Average, 1914–1920	Average, 1921–1925	1923	1924	1925	1926
Supply:								
Stocks on farms, July 1	46,123	28,872	32,631	37,058	35,894	30,980	29,348	20,739
Stocks in country mills and elevators, July 1 [1]	27,000	29,000	26,997	30,991	37,117	36,626	25,287	22,980
Commercial visible (Bradstreet's), July 1	31,817	24,168	19,290	25,519	29,403	38,597	29.285	16,484
Stocks of flour (in terms of wheat), July 1 [1]	7,114	8,024	8,240	8,307	10,048	9,207	8,168	9,757
New crop	677,927	690,108	844,605	804,148	797,381	864,428	676,429	832,305
Imports (flour included), July 1 to June 30	746	1,808	19,746	17,424	28,045	6,190	15,679	
Total supply	791.027	781,980	951,509	923,446	937,888	986,037	784,196	
Distribution:								
Exports (flour included), July 1 to June 30	152,623	104,967	255,011	205,320	156,430	260,803	108,035	
Reexports, July 1 to June 30	397	195	561	217	88	92	313	
Shipments (flour included), to Alaska, Hawaii, Porto Rico	1,722	2.445	2,476	2,741	2,851	2,752	2,741	
Estimated seed requirements	70.444	72,326	88,312	86,849	79,378	84,024	83,180	
Carry over on June 30—								
On farms	40,651	32,485	36,127	29,861	30,980	29,348	20,739	
In country mills and elevators [1]	25,400	31,600	26,449	30,153	36,626	25,287	22,980	
Commercial visible (Bradstreet's)	28,668	25,326	18,265	26,822	38,597	29,285	16,484	
Flour (in terms of wheat) [1]	6,986	8,628	7,938	8,928	9,207	8,168	9,757	
Total distribution	328,894	277,972	435.139	390,894	354,157	439,759	264,229	
Disappearance for food, feed, and loss	464,133	504,008	516,370	532,552	583,731	546,278	519,967	
Population, Jan. 1 (thousands)	82,614	94,378	102,880	112,696	112.710	114,553	116,257	
Per capita disappearance, food, feed, and loss, bushels	5.6	5.3	5.0	4.7	5.2	4.8	4.5	

Division of Statistical and Historical Research.

[1] Compiled from Chicago Daily Trade Bulletin. Stocks in country mills and elevators, from 1899–1918, are stocks in second hands less visible supply on July 1, as given by Chicago Daily Trade Bulletin.

TABLE 12.—*Wheat: Farm stocks, supplies, and shipments, United States, 1909–1926*

Year beginning July	Stocks in mills and elevators July 1 [1]	Old stocks on farms July 1 [2]	Crop			Total supplies (except visible)	Stocks on farms Mar. 1, following [2]	Stocks in mills and elevators Mar. 1, following [1]	Shipped out of county where grown [5]
			Quantity	Weight per bushel [3]	Quality [4]				
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*Pounds*	*Per cent*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
1909		14,171	700,434	57.9	90.4	714,605	163,371		428,262
1910		36,725	635,121	58.5	93.1	671,846	162,705	98,597	352,906
1911		34,071	621,338	57.8	88.3	655,409	122,041	95,710	348,739
1912		23,876	730,267	58.3	90.0	754,143	156,471	118,400	449,881
1913		35,515	763,380	58.7	93.2	798,895	151,795	93,627	411,733
1914		32,236	891,017	58.0	89.7	923,253	152,903	85,955	541,198
1915		28,972	1,025,801	57.9	88.4	1,054,773	244,448	155,027	633,380
1916		74,731	636,318	57.1	87.0	711,049	100,650	89,173	361,088
1917		15,611	636,655	58.5	92.4	652,266	107,745	66,138	325,500
1918		8,063	921,438	58.8	93.1	929,501	128,703	107,037	541,666
1919	19,672	19,261	967,979	56.3	82.1	1,006,912	169,904	123,233	591,552
1920	37,304	49,546	833,027	57.4	88.9	919,877	217,037	87,075	491,035
1921	27,167	56,707	814,905	57.0	85.8	898,779	134,253	75,071	502,470
1922	28,756	32,359	867,598	57.7	87.6	928,713	156,087	102,908	584,089
1923	37,117	35,894	797,394	57.4	87.5	870,405	137,721	98,284	505,792
1924	36,626	30,981	864,428	58.9	93.1	932,035	112,095	67,673	630,819
1925	25,287	29,357	676,429	58.3	89.0	731,073	100,137	76,333	483,519
1926 [6]	22,980	20,973	832,305	59.1	92.6	876,258			

Division of Crop and Livestock Estimates. Prior to 1918 stocks in mills and elevators not included.

[1] Based on percentage of crop as estimated by about 3,500 mill and elevator operators.
[2] Based on percentage of crop on farms as estimated by crop reporters.
[3] Based on estimates of crop reporters on Nov. 1.
[4] Percentage of "a high medium grade" as estimated by crop reporters at time of harvest.
[5] Based on percentage shipped out as estimated by crop reporters.
[6] Preliminary.

TABLE 13.—*Wheat: Receipts at primary markets, averages by groups, 1909–1925, and annual, 1921–1925*

[Thousand bushels—i. e., 000 omitted]

Year beginning July	Chicago	Minneapolis	Duluth	St. Louis	Kansas City	Omaha	Total, 11 markets [1]
Average:							
1909–1913	37,111	102,067	52,048	24,713	35,756	15,892	279,257
1914–1920	60,469	119,090	51,044	38,228	67,515	22,521	385,102
1921–1925	49,959	112,209	66,874	37,295	74,144	22,541	388,647
1921	51,548	105,343	49,226	39,009	90,571	25,310	385,637
1922	51,660	133,830	65,541	40,605	77,684	25,356	420,166
1923	49,804	105,958	38,201	33,119	60,516	17,896	333,388
1924	71,009	104,037	111,194	44,047	89,444	29,120	478,555
1925	25,776	111,877	70,210	29,697	52,502	15,023	325,490
Monthly average, 1921–1925:							
July	8,201	5,708	2,281	6,051	13,512	2,902	41,719
August	16,966	11,302	3,631	6,616	14,368	4,863	62,832
September	6,433	17,821	15,414	3,673	7,931	2,897	57,484
October	3,830	15,429	13,444	3,534	6,942	2,704	48,516
November	1,996	12,253	11,477	2,727	5,214	1,523	38,069
December	1,846	11,807	5,806	2,542	5,740	1,511	31,797
January	1,483	9,342	1,981	2,647	4,260	1,234	22,019
February	1,547	6,573	1,856	2,276	4,229	1,314	18,983
March	1,274	7,300	2,009	2,157	2,878	999	17,547
April	1,395	4,559	2,073	1,491	2,157	744	13,233
May	3,428	4,508	3,119	1,959	3,038	1,184	18,443
June	1,560	5,608	3,784	1,622	3,875	665	17,986

Division of Statistical and Historical Research. Compiled from the Chicago Daily Trade Bulletin and the annual reports of the Chicago Board of Trade. Data, 1909–1920, available in 1925 Yearbook, p. 755, Table 17.

[1] Includes also Milwaukee, Toledo, Detroit, Peoria, and Indianapolis.

TABLE 14.—*Wheat: Visible supply in the United States, 1909–1926*

[Thousand bushels—i. e., 000 omitted]

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
Average:												
1909–1913	24, 168	28, 569	37, 458	48, 202	56, 838	63, 908	66, 229	62, 228	58, 419	53, 802	43, 857	34, 183
1914–1920	19, 290	24, 822	38, 946	56, 235	69, 877	76, 250	75, 530	69, 586	60, 014	49, 475	35, 591	27, 728
1921–1925	25, 519	34, 513	52, 612	64, 541	66, 786	67, 445	68, 605	62, 988	59, 746	52, 365	43, 975	35, 777
1909	12, 771	12, 611	15, 514	28, 589	37, 820	41, 688	37, 949	36, 638	34, 461	37, 558	33, 771	24, 795
1910	16, 396	17, 053	38, 352	48, 437	53, 420	57, 002	59, 369	56, 357	50, 566	42, 697	34, 656	32, 769
1911	29, 639	46, 389	54, 581	61, 500	73, 792	81, 215	81, 501	70, 748	66, 982	59, 826	48, 022	35, 994
1912	27, 615	23, 595	26, 862	40, 998	52, 494	67, 575	77, 471	76, 131	73, 895	69, 000	53, 508	43, 697
1913	34, 420	43, 198	51, 980	61, 485	66, 663	72, 061	74, 854	71, 264	66, 191	59, 931	49, 327	33, 662
1914	17, 136	36, 456	39, 964	61, 784	76, 262	86, 332	85, 957	81, 776	58, 923	46, 287	31, 407	22, 871
1915	10, 734	9, 361	12, 679	22, 498	33, 338	60, 678	80, 150	77, 834	73, 748	66, 691	57, 658	52, 512
1916	50, 515	49, 591	65, 754	70, 420	75, 455	76, 191	73, 584	59, 477	54, 160	[illegible]8, 525	32, 831	34, 876
1917	19, 901	11, 692	10, 315	13, 072	22, 855	29, 633	26, 476	20, 436	15, 4[illegible]	10, 180	6, 656	4, 379
1918	2, 465	20, 462	54, 236	98, 155	131, 852	131, 584	129, 627	140, 607	127, [illegible]07	100, 505	55, 247	27, 626
1919	10, 873	25, 968	65, 479	95,550	107, 783	101, 058	85, 117	68, 494	58, 632	51, 909	47, 756	41, 233
1920	23, 404	20, 226	24, 195	32, 169	41, 596	48, 273	47, 797	38, 475	31, 945	22, 229	17, 584	10, 598
1921	9, 966	28, 727	47, 159	62, 758	62, 767	53, 507	56, 776	48, 802	46, 714	42, 287	36, 644	31, 497
1922	20, 342	23, 077	32, 479	38, 025	39, 023	39, 764	43, 856	53, 823	54, 562	51, 862	49, 521	37, 203
1923	29, 403	40, 526	63, 922	72, 930	79, 034	82, 269	84, 030	75, 111	72, 914	66, 739	50, 383	48, 686
1924	38, 597	46, 193	79, 700	92, 353	100, 712	108, 997	99, 121	84, 476	76, 437	62, 766	49, 529	38, 328
1925	29, 285	34, 041	39, 800	56, 639	52, 394	52, 686	59, 244	52, 730	48, 105	38, 173	33, 798	23, 170
1926	16, 486	34, 575	72, 884	84, 724	81, 175	78, 910						

Division of Statistical and Historical Research.

Compiled from Bradstreet's. Includes grain stored at approximately fifty interior and seaboard points of accumulation and grain in transit by canals and lakes; also Pacific coast stocks at Portland, Tacoma, and Seattle. Reported on the Saturday nearest the first of the month.

TABLE 15.—*Wheat: Classification of cars graded by licensed inspectors, all inspection points*

Year beginning July	Receipts							Shipments						
	No. 1	No. 2	No. 3	No. 4	No. 5	Sample	Total	No. 1	No. 2	No. 3	No. 4	No. 5	Sample	Total
	Total of all classes and subclasses under each grade, by cars, annual, 1917–1925													
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
1917	60,848	91,143	59,421	23,435	15,766	15,402	266,015	17,926	26,559	17,833	6,503	4,299	3,625	76,745
1918	300,264	203,965	63,827	26,660	10,017	18,247	622,980	246,577	87,173	14,106	4,496	1,519	3,181	357,052
1919	45,427	192,026	187,533	101,279	49,423	28,799	604,487	16,602	143,770	96,744	18,460	6,335	4,648	276,559
1920	153,069	241,339	124,184	49,703	38,367	49,675	656,337	44,837	268,752	44,407	9,889	8,930	7,724	384,539
1921	91,844	269,250	147,537	51,763	27,690	59,290	647,374	21,414	255,512	34,243	7,864	4,753	11,662	335,448
1922	138,020	210,527	131,368	48,466	15,626	38,998	583,005	28,387	226,008	37,610	6,421	2,823	6,495	307,744
1923	107,481	163,393	101,759	43,887	24,069	24,984	465,573	45,617	137,406	28,290	5,605	4,978	5,816	227,712
1924	191,525	263,763	97,583	43,749	10,298	18,559	625,477	104,344	260,291	14,293	4,160	2,194	3,617	388,899
1925	135,832	179,427	78,817	29,945	10,059	10,323	444,403	62,888	128,637	10,254	2,865	1,341	2,328	208,313
Class	Total inspections, by grade and class, July 1, 1925, to June 30, 1926													
Hard red spring	66,794	27,908	21,901	11,295	3,878	3,979	135,755	47,540	20,524	3,090	1,412	290	939	73,795
Durum	7,487	22,008	6,135	3,286	528	1,206	40,650	1,059	26,920	997	343	56	115	29,490
Hard red winter	39,614	71,517	26,009	7,107	3,014	2,418	149,679	10,678	43,912	4,028	590	398	406	60,012
Soft red winter	6,391	23,799	7,902	2,213	961	1,125	42,391	1,756	13,489	670	75	96	105	16,191
White	3,916	15,719	9,089	2,954	499	418	32,595	272	7,873	340	21	20	21	8,547
Mixed	11,630	18,476	7,781	3,090	1,179	1,177	43,333	1,583	15,919	1,129	424	481	742	20,278
Year beginning July	Total of all classes and subclasses under each grade, by percentages, annual, 1917–1925													
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
1917	22.9	34.3	22.3	8.8	5.9	5.8	100	23.4	34.6	23.2	8.5	5.6	4.7	100
1918	48.2	32.7	10.2	4.3	1.6	3.0	100	69.1	24.4	3.9	1.3	.4	.9	100
1919	7.5	31.8	31.0	16.7	8.2	4.8	100	6.0	52.0	31.3	6.7	2.3	1.7	100
1920	23.3	36.8	18.9	7.6	5.8	7.6	100	11.7	69.9	11.5	2.6	2.3	2.0	100
1921	14.2	41.6	22.8	8.0	4.3	9.1	100	6.4	76.2	10.2	2.3	1.4	3.5	100
1922	23.7	36.1	22.5	8.3	2.7	6.7	100	9.2	73.5	12.2	2.1	.9	2.1	100
1923	23.1	35.1	21.8	9.4	5.2	5.4	100	20.0	60.3	12.4	2.5	2.2	2.6	100
1924	30.6	42.2	15.6	7.0	1.6	3.0	100	26.8	66.9	3.7	1.1	.6	.9	100
1925	30.6	40.4	17.7	6.7	2.3	2.3	100	30.2	61.8	4.9	1.4	.6	1.1	100
Class	Total inspections, by grade and class July 1, 1925, to June 30, 1926													
Hard red spring	49.2	20.6	16.1	8.3	2.9	2.9	100	64.4	27.8	4.2	1.9	.4	1.3	100
Durum	18.4	54.1	15.1	8.1	1.3	3.0	100	3.6	91.3	3.4	1.1	.2	.4	100
Hard red winter	26.5	47.3	17.4	4.7	2.0	1.6	100	17.8	73.2	6.7	.0	.6	.7	100
Soft red winter	15.1	56.1	18.6	5.2	2.3	2.7	100	10.8	83.3	4.1	.5	.6	.7	100
White	12.0	48.2	27.9	9.1	1.5	1.3	100	3.2	92.1	4.0	.3	.2	.2	100
Mixed	26.9	42.6	18.0	7.1	2.7	2.7	100	7.8	78.5	5.6	2.1	2.4	3.6	100

Grain Division.

Table 16.—*Wheat, and wheat including flour: Domestic exports from the United States, by months, 1910–1926*

[Thousand bushels—i. e., 000 omitted]

WHEAT

Year ended June 30	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Average:													
1910–1914	3, 371	8, 937	7, 919	7, 573	5, 533	5, 087	3, 940	2, 412	2, 493	3, 062	3, 686	2, 900	56, 913
1915–1921	10, 804	16, 166	19, 689	17, 975	15, 582	17, 282	14, 019	11, 474	11, 308	13, 382	13, 048	12, 292	173, 021
1922–1926	11, 602	26, 235	22, 858	19, 042	12, 241	9, 313	6, 530	4, 750	5, 725	4, 900	8, 278	8, 675	140, 149
1910	2, 783	6, 157	7, 156	8, 566	8, 427	3, 727	1, 428	1, 166	1, 204	2, 953	2, 487	626	46, 680
1911	862	2, 131	2, 226	3, 260	2, 505	3, 409	2, 802	1, 349	1, 883	1, 315	1, 371	616	23, 729
1912	3, 260	6, 253	5, 088	3, 350	2, 299	3, 084	2, 043	1, 243	1, 352	1, 386	603	199	30, 160
1913	545	5, 800	13, 153	15, 255	10, 584	9, 490	8, 441	4, 356	4, 569	6, 590	7, 159	5, 661	91, 603
1914	9, 404	24, 346	11, 971	7, 434	8, 852	5, 727	4, 985	3, 947	3, 457	3, 066	6, 810	7, 395	92, 394
1915	26, 357	24, 341	25, 867	19, 578	19, 182	28, 876	24, 088	24, 432	20, 541	[illegible]	14, 227	9, 396	259, 643
1916	7, 956	16, 838	21, 526	18, 040	13, 500	12, 624	13, 401	15, 054	17, 293	[illegible]	14, 571	5, 905	173, 274
1917	6, 355	11, 060	13, 108	11, 985	14, 279	14, 473	18, 906	10, 384	7, 885	14, 233	11, 359	15, 804	149, 831
1918	5, 059	5, 170	2, 613	5, 415	4, 878	4, 491	1, 914	1, 048	1, 687	1, 024	353	467	34, 119
1919	225	15, 120	26, 848	21, 319	16, 087	25, 084	9, 943	5, 092	10, 208	17, 338	14, 029	16, 390	178, 583
1920	5, 834	12, 941	17, 090	13, 687	15, 116	9, 520	8, 480	4, 938	6, 939	4, 176	10, 864	12, 846	122, 431
1921	23, 838	27, 694	30, 771	35, 803	26, 035	25, 903	21, 345	18, 469	14, 601	17, 642	25, 932	25, 235	293, 268
1922	24, 842	58, 537	30, 842	18, 206	13, 955	10, 451	10, 038	5, 577	7, 645	4, 856	9, 366	14, 006	208, 321
1923	14, 979	33, 703	25, 987	18, 282	10, 577	9, 676	7, 297	5, 991	4, 291	4, 943	9, 973	9, 252	154, 951
1924	8, 843	14, 198	15, 408	9, 239	4, 148	4, 950	4, 421	3, 095	2, 958	3, 747	2, 811	4, 975	78, 793
1925	4, 048	16, 835	32, 662	45, 128	27, 831	17, 791	8, 484	7, 387	9, 960	8, 424	9, 870	7, 070	195, 490
1926	5, 295	7, 901	9, 391	4, 354	4, 696	3, 695	2, 412	1, 700	3, 770	2, 533	9, 368	8, 074	63, 189
1927	16, 083	28, 995	23, 700	17, 589	14, 230	9, 622	------	------	------	------	------	------	------

WHEAT, INCLUDING FLOUR, IN TERMS OF GRAIN[1]

Year ended June 30	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Average:													
1910–1914	6, 119	12, 391	12, 987	13, 038	10, 637	[illegible]	[illegible]	6, 250	6, 356	6, 831	7, 629	6, 215	107, 103
1915–1921	17, 350	20, 865	24, 642	23, 832	21, 760	24, 558	21, 729	18, 156	19, 451	21, 920	21, 882	20, 885	257, 030
1922–1926	15, 934	32, 004	29, 375	26, 584	18, 885	15, 671	11, 836	10, 111	11, 772	9, 823	12, 431	12, 811	207, 237
1910	1, 711	8, 954	12, 708	14, 135	13, 199	9, 366	5, 131	3, 632	3, 850	5, 436	5, 087	2, 964	89, 173
1911	3, 233	5, 071	6, 361	7, 637	6, 944	8, 249	7, 187	5, 296	5, 783	5, 416	6, 051	4, 107	71, 338
1912	6, 410	10, 350	10, 950	9, 066	6, 766	8, 199	5, 984	5, 199	6, 053	5, 080	4, 554	3, 280	81, 891
1913	3, 118	9, 049	17, 158	20, 990	16, 401	14, 710	13, 668	9, 409	8, 988	11, 007	11, 357	9, 304	145, 159
1914	13, 125	28, 526	17, 759	13, 363	9, 873	10, 838	9, 914	7, 71[illegible]	7, 108	7, 217	11, 098	11, 419	147, 955
1915	30, 343	27, 763	31, 681	25, 935	26, 195	37, 489	32, 380	31, 739	28, 483	29, 511	20, 558	13, 625	335, 702
1916	11, 826	20, 599	28, 514	24, 023	19, 520	20, 762	21, 223	21, 333	24, 372	22, 687	20, 860	12, 502	246, 221
1917	10, 771	15, 091	18, 384	16, 315	19, 216	18, 876	24, 230	13, 701	12, 641	18, 695	16, 437	21, 605	205, 962
1918	8, 422	9, 736	7, 182	11, 523	10, 614	15, 301	12, 450	10, 492	12, 207	12, 364	10, 915	11, 373	132, 579
1919	11, 154	19, 496	28, 348	24, 531	21, [illegible]	[illegible]	22, 103	15, 842	20, 314	31, 129	26, 305	32, 652	287, 402
1920	13, 797	20, 474	25, 206	21, 141	23, 580	15, 559	12, 358	10, 707	17, 102	13, 934	26, 221	21, 951	222, 030
1921	35, 135	32, 895	[illegible]	43, 355	31, 209	30, 376	27, 361	23, 278	21, 039	25, 120	31, 877	32, 486	369, 313
1922	30, 661	67, 338	30, 310	25, 522	19, 813	15, 217	15, 231	11, 231	14, 673	10, 698	14, 485	18, [illegible]	[illegible], 566
1923	19, 308	39, 198	32, 099	25, 379	17, 890	16, 728	12, 751	12, 473	11, 011	10, 428	14, 593	13, 0[illegible]	[illegible]
1924	12, 999	20, 183	22, 779	19, 071	12, 503	13, 358	12, 486	10, 326	9, 659	8, 624	7, 401	10, 491	159, 890
1925	7, 758	21, 295	39, 537	53, 834	35, 425	24, 616	13, 126	11, 784	16, 480	12, 912	13, 114	10, 022	260, 803
1926	8, 944	12, 007	13, 152	9, 113	8, 794	8, 437	5, 587	4, 742	7, 039	6, 452	12, 558	11, 210	108, 035
1927	19, 811	35, 774	31, 031	24, [illegible]	20, 545	15, 301							

Division of Statistical and Historical Research. Compiled from Monthly Summary of Foreign Commerce of the United States, and official records of the Bureau of Foreign and Domestic Commerce.

[1] Includes exports of flour milled from Canadian wheat imported in bond. Does not include reexports. Flour has been converted to grain on the following basis: 1909–1917, 1 barrel of flour is the product of 4.7 bushels of grain; 1918 and 1919, 4.5 bushels; 1920, 4.6 bushels; and 1921–1926, 4.7 bushels.

TABLE 17.—*Wheat, including flour: Exports from the United States, with customs districts grouped according to coast line and border ports, 1924–1926*

[In thousands—i. e., 000 omitted]

Customs districts groups	Year ended June 30								
	Wheat			Wheat flour			Wheat including flour [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Bushels	*Bushels*	*Bushels*	*Barrels*	*Barrels*	*Barrels*	*Bushels*	*Bushels*	*Bushels*
Canadian border and lake ports [2]	17, 964	55, 766	21, 284	83	43	11	18, 355	55, 968	21, 338
Atlantic coast [3]	12, 987	53, 004	16, 893	6, 228	6, 591	5, 096	42, 256	83, 983	40, 843
Gulf coast [4]	13, 508	69, 200	3, 061	3, 948	4, 835	1, 905	32, 064	91, 924	12, 015
Mexican border [5]	1, 588	143	964	198	62	74	2, 520	436	1, 313
Pacific coast [6]	32, 746	17, 377	20, 987	6, 796	2, 365	2, 456	64, 685	28, 492	32, 526
Total	78, 793	195, 490	63, 189	17, 253	13, 896	9, 542	159, 880	260, 803	108, 035

Division of Statistical and Historical Research. Compiled from official records of the Bureau of Foreign and Domestic Commerce.

[1] Barrels of wheat flour converted to bushels of grain on the basis of 1 barrel=4.7 bushels

[2] Includes Montana and Idaho, Dakota, Duluth and Superior, Wisconsin, Michigan, Chicago, Vermont, St. Lawrence, Buffalo, Ohio, and Minnesota.

[3] Includes Maine and New Hampshire, New York, Philadelphia, Maryland, Virginia, South Carolina, Georgia, Porto Rico, Connecticut, Rhode Island, and Massachusetts.

[4] Includes Florida, Mobile, New Orleans, Sabine, and Galveston.

[5] Includes Arizona, San Antonio, and El Paso

[6] Includes San Diego, Los Angeles, San Francisco, Oregon, Washington, Alaska, and Hawaii.

TABLE 18.—*Wheat: Production and inspection for export, by classes, United States, average 1921–1925, annual 1923–1925, and July-December, 1926*

[Thousand bushels—i. e., 000 omitted]

Class [1]	Year beginning July								July-December, 1926	
	Average, 1921–1925		1923		1924		1925			
	Estimated production [1]	Inspections of United States wheat for export	Estimated production [1]	Inspections of United States wheat for export	Estimated production [1]	Inspections of United States wheat for export	Estimated production [1]	Inspections of United States wheat for export	Estimated production [1]	Inspections of United States wheat for export
Hard red spring	156, 686	9, 997	126, 876	1, 022	196, 608	16, 760	159, 258	3, 338	127, 175	1, 314
Durum	66, 111	7, 198	55, 256	4, 908	64, 228	5, 945	63, 283	4, 170	46, 967	535
Hard red winter	265, 762	49, 594	241, 851	19, 640	325, 991	90, 840	190, 960	7, 358	317, 073	52, 871
Soft red winter	233, 608	11, 776	271, 631	9, 810	222, 684	6, 944	188, 452	2, 282	263, 040	17, 978
White [2]	81, 980	11, 998	101, 767	18, 653	54, 917	10, 063	74, 476	16, 914	78, 050	20, 722
Mixed [3]		12, 955		5, 435		9, 386		5, 944		1, 030
Flour as wheat		67, 088		81, 087		65, 313		44, 846		36, 974
Other wheat [4]		32, 558		15, 875		44, 772		23, 183		15, 136
Total	804, 148	203, 164	797, 381	156, 430	864, 428	250, 023	676, 429	108, 035	832, 305	146, 560

Division of Statistical and Historical Research for estimated production by classes; Grain Division for inspections of United States wheat for export. Data, 1921 and 1922, available in 1925 Yearbook, page 762, Table 17.

[1] The spring and winter wheats listed do not include the spring and winter in the white wheats. Production estimates are based on the estimate of percentage classification by States as reported for 1920 and 1923 to the Division of Crop and Livestock Estimates; the percentages for 1921 and 1922 were interpolated from the 1920 and 1923 percentages. The estimated production for 1925 and 1926 is subject to revision.

[2] White wheat in the Pacific Northwest region consists of both spring and winter wheat; no attempt has been made to classify this wheat as other than white wheat, part of which is spring and part winter.

[3] From July 1, 1921, to June 30, 1923, 70 per cent of the exports of mixed wheat is estimated as durum.

[4] Exports of wheat other than reported as "Federal inspected," including exports through Canada.

Table 19.—*Wheat, including flour: International trade, average 1910–1914, annual 1924–1926*

[Thousand bushels—i. e., 000 omitted]

Country	Year ended June 30							
	Average 1910–1914		1924		1925		1926, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Algeria	[1] 639	[1] 5,936	[1] 1,588	10,365	[1] 2,702	1,892	[2] 1,175	6,161
Argentina	[3] 3	85,220	[4] 3	170,009	[4] 10	125,289	[4] 2	99,803
Australia	[3] 7	[3] 49,732	2	83,384	3	124,112		77,496
British India	332	50,821	[1] 584	[5] 18,924	[6] 49	[6] 45,209	[6] 1,327	[6] 8,054
Bulgaria		[1] 11,182	[1] 18	[1] 2,442	[1] 1,943	[illegible]		4,128
Canada	447	94,286	430	343,781	651	194,849	372	320,553
Chile	[3] 170	[3] 2,593	34	4,756	2	8,822	731	1,696
Hungary	[1] 7,214	[1] 49,116	4	16,637	1,029	15,630	34	20,102
Rumania	[1] 106	[1] 54,630	6	[1] 5,793	752	4,788	[2] 237	8,925
Russia	[1] 556	[1] 164,862		21,367		301		27,085
Spain	6,009	71	([7])	277	2	692	1,466	688
Tunis	[1] 1,746	[1] 960	[1] 495	[1] 3,262	[1] 967	1,155	[2] 453	[8, 9] 3,161
United States	1,808	104,967	28,079	159,880	6,201	260,802	15,664	108,035
Yugoslavia				[1] 5,770		[8] 9,570		[8] 11,549
PRINCIPAL IMPORTING COUNTRIES								
Austria	[1] 11,402	[1] 871	17,544	[1] 293	16,474	[1] 254	14,822	[2] 171
Belgium	72,877	21,965	43,176	3,412	45,135	5,791	42,689	3,650
Brazil [4]	[3] 20,495		22,827	29	28,507	17	27,450	
Ceylon [8, 10]			[11] 753		791		894	
Cuba	4,248		6,108					
Czechoslovakia			19,487	[1] 509	23,902	[1] 888	19,164	212
Denmark	[1] 7,155	[1] 597	9,526	229	7,265	796	6,892	897
Egypt	[1] 8,244	[1] 59	7,825	171	9,476	88	12,520	26
Estonia [8]			[11] 880		850		948	
Finland	[3] 4,912	([3] [7])	4,881		4,212	([3] [7])	4,879	
France	44,081	1,230	54,213	2,797	43,818	2,646	35,968	1,955
French Indo-China [8, 10]			951		1,089		1,044	
Germany	91,851	23,300	29,751	161	76,243	5,227	76,410	20,252
Greece	[3] 7,035	[3] 2	18,733	[1] 2	[8] 21,791			
Irish Free State					19,101		18,539	90
Italy	56,431	3,637	77,552	7,680	102,126	5,867	66,330	2,469
Japan	[1] 4,116	[1] 28	28,955	340	15,205	1,985	27,980	4,899
Latvia			[1] 1,777	[1] 6	[8] 1,963	[1] 20	[8] 1,579	[2] 2
Netherlands	[1] 80,702	[1] 58,435	30,762	3,385	30,623	4,507	29,166	1,699
New Zealand	[8] 163	[8] 918	1,459	2	3,007	2	2,503	1
Norway	[1] 3,674		6,507	[1] 15	5,489	[1] 16	6,375	[2] 5
Poland			[1] 2,556	[1] 14	[1] 16,571	[1] 23	9,603	3,596
Portugal [1]	2,630	219						
Sweden	[1] 7,080	[1] 23	12,214	309	11,461	107	6,696	689
Switzerland	[1] 16,937	[1] 14	16,233	([7])	14,355	([7])	14,245	([7])
Syria and Lebanon [8]			[11] 401		2,065		3,161	
Union of South Africa	[3] 6,274	[3] 253	6,882	[12] 2	6,773	[10] 16	6,063	[10] 15
United Kingdom	219,474	4,493	224,136	13,741	234,512	[10] 18,443	202,980	[10] 13,381
Total, 42 countries	688,908	790,420	677,332	879,744	757,115	840,127	660,361	751,385

Division of Statistical and Historical Research. Official sources except where otherwise noted.

[1] Year ended July 31, International Yearbook of Agricultural Statistics
[2] Ten months ended May 31, International Yearbook of Agricultural Statistics.
[3] Average of calendar years, 1909–1913.
[4] Year ended December 31.
[5] Twelve months' sea trade, nine months' land trade.
[6] Sea trade only.
[7] Less than 500 bushels.
[8] International Crop Report and Agricultural Statistics.
[9] Wheat only.
[10] Wheat flour only.
[11] Eleven months.
[12] Ten months.

TABLE 20.—*Wheat: Estimated price per bushel, received by producers, United States, 1909–1926*

Year beginning July	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted av.
Average:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1909–1913	93.6	89.5	87.7	88.1	87.3	86.7	88.4	89.2	88.9	89.3	90.3	89.0	88.7
1914–1920	167.4	166.6	165.0	164.8	162.2	161.7	167.9	170.6	170.0	177.1	183.8	178.8	165.1
1921–1925	108.8	109.8	108.4	110.9	113.8	117.1	123.3	126.9	128.4	121.2	123.0	120.1	113.7
1909	114.0	101.2	94.9	97.2	99.2	101.0	104.2	105.0	104.8	102.2	98.8	96.4	100.7
1910	97.1	97.4	94.8	92.1	89.4	88.4	89.2	87.0	84.6	84.2	85.4	85.3	91.7
1911	83.5	83.8	86.6	90.0	89.4	87.7	89.2	90.6	91.6	96.1	101.2	100.9	88.3
1912	94.4	87.8	84.6	83.6	79.9	76.1	78.0	80.2	79.8	80.0	81.8	82.0	82.3
1913	79.2	77.1	77.5	77.4	78.4	80.4	81.3	82.4	83.6	84.0	84.2	80.6	79.3
1914	76.7	84.9	93.4	95.4	97.9	103.2	118.8	131.8	132.6	135.6	135.6	117.2	99.4
1915	104.6	100.8	93.0	92.0	92.5	97.4	108.4	108.4	100.8	100.6	101.2	96.5	98.2
1916	100.0	119.2	133.8	147.4	159.4	155.3	157.6	164.6	172.2	213.0	247.2	234.3	144.4
1917	224.5	219.3	205.2	200.3	200.4	201.4	201.6	202.0	202.6	203.1	203.0	202.8	205.8
1918	203.8	205.0	205.7	205.9	205.1	204.5	206.2	207.8	211.1	222.6	229.8	225.2	206.3
1919	219.6	211.4	207.6	211.4	214.0	223.4	233.8	231.2	230.3	242.6	250.8	256.0	218.6
1920	242.9	225.4	216.5	201.2	165.8	146.4	149.2	148.2	140.4	122.1	119.0	119.8	182.9
1921	108.5	103.0	103.4	99.9	93.4	93.0	95.2	107.0	117.0	119.0	118.8	109.6	104.4
1922	99.8	92.6	89.2	94.1	99.4	103.2	104.6	104.4	106.0	108.4	108.2	100.8	98.0
1923	89.6	86.4	91.0	94.2	93.7	94.5	96.7	98.0	98.8	95.8	96.8	98.5	92.4
1924	105.8	116.8	114.2	129.7	133.6	141.1	162.1	169.8	164.0	140.5	149.1	152.7	127.8
1925	140.3	150.4	144.4	136.4	148.8	153.7	158.1	155.5	146.0	142.2	142.1	138.9	145.9
1926	127.7	125.1	117.7	121.4	123.6	122.8							

Division of Crop and Livestock Estimates. Mean of prices reported on 1st of month and 1st of succeeding month, July, 1909–December, 1923.

TABLE 21.—*Wheat: Estimated price per bushel, received by producers, December 1, average 1921–1925 annual 1921–1926*

State	Avr., 1921–1925	1921	1922	1923	1924	1925	1926	State	Avr., 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Me	161	175	170	118	170	170	175	S. C	175	208	157	154	170	185	155
Vt	142	125	145	140	150	150	132	Ga	165	175	150	147	169	182	150
N. Y	126	108	118	110	144	152	132	Ky	120	115	118	108	143	160	133
N. J	127	113	110	110	157	143	132	Tenn	134	120	123	115	147	166	136
Pa	121	103	110	100	144	147	129	Ala	156	153	160	130	162	175	160
Ohio	125	108	117	99	145	158	127	Miss	130	130	145	110	150	160	130
Ind	123	106	112	98	142	155	124	Ark	119	100	106	108	133	150	128
Ill	117	100	107	94	136	150	122	Okla	110	86	98	93	124	147	118
Mich	122	104	115	96	138	156	122	Tex	119	100	110	103	120	155	120
Wis	112	97	103	98	128	136	126	Mont	104	85	89	82	124	139	112
Minn	112	97	101	95	130	137	123	Idaho	120	72	90	80	131	125	106
Iowa	108	88	99	89	127	136	120	Wyo	95	79	82	80	111	124	107
Mo	117	99	105	97	133	150	124	Colo	100	76	89	83	118	136	107
N. Dak	104	85	90	86	126	131	117	N. Mex	122	105	120	108	125	150	110
S. Dak	103	87	92	81	125	128	118	Ariz	139	125	115	140	141	175	130
Nebr	105	83	96	83	122	140	117								
								Utah	103	75	90	91	130	130	105
Kans	112	93	98	91	128	148	119	Nev	132	130	120	115	150	146	116
Del	119	98	108	100	144	145	130	Wash	107	86	104	85	130	130	116
Md	122	103	112	100	145	151	130	Oreg	89	85	108	88	129	136	120
Va	131	116	122	110	148	161	131	Calif	126	107	115	108	154	148	130
W. Va	132	117	122	116	147	158	135								
N. C	148	144	136	128	166	171	143	United States	111.4	92.6	100.7	92.3	129.9	141.6	119.9

Division of Crop and Livestock Estimates.

TABLE 22.—*Wheat: Weighted average price per bushel of reported cash sales, 1909–1926*

NO. 1 NORTHERN SPRING, MINNEAPOLIS [1]

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Weighted average [2]
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1909–1913	1.10	1.02	1.00	0.90	0.97	0.97	1.00	1.00	1.00	0.99	1.02	1.01	0.99
1914–1920	1.99	1.97	1.89	1.87	1.88	1.89	1.97	1.92	1.96	2.07	2.17	2.07	1.90
1921–1925	1.45	1.34	1.32	1.33	1.33	1.41	1.48	1.50	1.46	1.45	1.48	1.44	1.39
1909	1.29	1.06	1.04	1.04	1.05	1.12	1.14	1.14	1.15	1.11	1.10	1.09	1.09
1910	1.21	1.13	1.09	1.08	1.04	1.03	1.06	1.02	.98	.96	.99	.97	1.05
1911	.99	1.05	1.09	1.10	1.05	1.02	1.06	1.06	1.08	1.10	1.16	1.13	1.07
1912	1.09	.98	.89	.90	.84	.82	.89	.87	.85	.88	.91	.92	.87
1913	.91	.88	.87	.84	.85	.86	.87	.93	.92	.91	.94	.92	.88
1914	.92	1.10	1.12	1.11	1.18	1.20	1.38	1.52	1.49	1.58	1.58	1.35	1.20
1915	1.44	1.18	.97	1.02	1.02	1.14	1.29	1.26	1.14	[illegible]	1.22	1.11	1.09
1916	1.21	1.64	1.64	1.79	1.95	1.79	1.93	1.86	2.03	2.38	2.96	2.73	1.76
1917	2.66	2.47	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.20
1918	2.17	2.23	2.23	2.19	2.22	2.22	2.21	2.24	2.36	2.56	2.59	2.48	2.25
1919	2.66	2.59	2.56	2.67	2.85	3.07	3.01	2.67	2.84	3.06	3.09	2.93	2.72
1920	2.88	2.56	2.54	2.16	1.79	1.66	1.79	1.72	1.66	1.53	1.57	1.69	2.07
1921	1.67	1.48	1.51	1.34	1.25	1.31	1.34	1.51	1.51	1.58	1.61	1.49	1.43
1922	1.49	1.11	1.10	1.15	1.23	1.25	1.23	1.26	1.24	1.30	1.28	1.17	1.20
1923	1.12	1.18	1.21	1.20	1.14	1.16	1.19	1.21	1.21	1.21	1.22	1.25	1.17
1924	1.37	1.31	1.30	1.46	1.48	1.66	1.89	1.87	1.71	1.50	1.67	1.64	1.56
1925	1.59	1.64	1.50	1.49	1.55	1.69	1.73	1.67	1.61	1.64	1.62	1.63	1.61
1926	1.72	1.49	1.43	1.49	1.46	1.46	------	------	------	------	------	------	------

NO. 2 RED WINTER, CHICAGO [3]

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Weighted average [2]
Average:													
1909–1913	0.90	0.97	0.99	1.03	1.00	0.99	1.05	1.02	1.00	1.01	1.05	0.97	0.99
1914–1920	1.82	1.81	1.84	1.82	1.83	1.87	1.96	1.89	1.91	2.00	2.19	1.99	1.83
1921–1925	1.25	1.26	1.28	1.33	1.36	1.44	1.49	1.53	1.48	1.42	1.45	1.37	1.33
1909	1.10	1.04	1.07	1.20	1.18	1.25	1.26	1.23	1.18	1.11	1.11	1.01	1.10
1910	1.07	1.02	.99	.96	.93	.94	.98	.91	.90	.90	.96	.91	1.02
1911	.86	.90	.93	1.00	.96	.96	.97	1.01	1.03	1.09	1.16	1.10	.90
1912	1.05	1.03	1.03	1.06	.99	.86	1.09	.99	.95	1.02	1.03	1.00	1.03
1913	.87	.88	.93	.92	.92	.94	.97	.97	.95	.95	.99	.82	.88
1914	.82	.92	1.11	1.12	1.15	1.20	1.39	1.57	1.52	1.59	1.55	1.24	1.08
1915	1.13	1.11	1.08	1.12	1.12	1.23	1.30	1.23	1.13	1.22	1.15	1.05	1.13
1916	1.23	1.43	1.53	1.66	1.85	1.76	1.89	1.74	1.99	2.43	2.94	2.76	1.68
1917	2.50	2.30	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.16	2.17	2.25
1918	2.22	2.21	2.25	2.25	2.24	2.29	2.34	2.28	2.36	2.52	2.76	2.32	2.22
1919	2.23	2.24	2.24	2.24	2.29	2.44	2.64	[4] 2.42	[4] 2.55	[4] 2.63	[4] 3.10	2.89	2.24
1920	2.63	2.49	2.53	2.18	[4] 2.01	2.02	[4] 1.96	1.85	1.65	1.41	1.67	1.47	2.23
1921	1.24	1.22	1.29	[4] 1.18	[4] 1.23	[4] 1.18	1.21	1.34	[4] 1.38	1.40	1.34	1.18	1.25
1922	1.14	1.07	1.06	1.18	1.27	1.33	1.30	1.35	1.31	1.32	1.28	1.16	1.14
1923	1.00	1.00	1.05	1.11	1.06	1.09	1.13	1.13	1.09	1.06	1.07	1.15	1.02
1924	1.29	1.31	1.31	1.53	1.55	1.80	1.95	2.00	1.91	1.66	1.89	1.87	1.58
1925	1.59	1.68	1.67	1.63	1.70	1.80	1.88	1.83	1.71	1.68	1.65	1.48	1.64
1926	1.45	1.37	1.34	1.39	1.38	1.40	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Data, 1899–1908, available in 1924 Yearbook, pp. 582–583, Table 32.

[1] Compiled from Minneapolis Daily Market Record.
[2] Average of daily prices weighted by car-lot sales.
[3] Compiled from the Chicago Daily Trade Bulletin.
[4] Based on small number of sales.

Table 22.—*Wheat: Weighted average price per bushel of reported cash sales, 1909–1926*—Continued

NO. 2 HARD WINTER, KANSAS CITY [5]

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Weighted average [2]
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909–1913	0.96	0.93	0.94	0.95	0.92	0.94	0.97	0.95	0.95	0.96	0.97	0.96	0.95
1914–1920	1.87	1.85	1.81	1.77	1.78	1.81	1.91	1.85	1.87	1.99	2.10	------	1.85
1921–1925	1.20	1.21	1.23	1.26	1.28	1.34	1.40	1.41	1.38	1.34	1.35	1.28	1.27
1909	1.14	1.02	1.02	1.06	1.04	1.10	1.11	1.11	1.10	1.08	1.07	1.08	1.07
1910	1.04	1.00	.99	.95	.91	.93	.95	.90	.88	.88	.90	.88	.98
1911	.87	.93	.95	1.04	1.00	1.00	1.05	1.03	1.05	1.09	1.11	1.09	.97
1912	.92	.89	.88	.88	.83	.84	.87	.86	.86	.88	.87	.88	.88
1913	.82	.83	.87	.84	.83	.84	.85	.86	.88	.87	.90	.85	.84
1914	.78	.91	1.04	1.02	1.08	1.13	1.34	1.54	1.49	1.54	1.50	1.21	1.05
1915	1.36	1.26	1.07	1.07	1.03	1.12	1.20	1.20	1.05	1.12	1.10	1.00	1.19
1916	1.14	1.41	1.57	1.67	1.85	1.72	1.89	1.82	1.97	2.43	3.01	2.74	1.71
1917	2.68	2.61	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12	------	2.52
1918	2.20	2.16	2.16	2.16	2.15	2.24	2.31	2.26	2.39	2.62	2.60	2.47	2.19
1919	2.25	2.18	2.24	2.30	2.46	2.63	2.82	2.42	2.49	2.75	2.93	2.76	2.42
1920	2.68	2.45	2.44	2.07	1.76	1.69	1.72	1.62	1.55	1.33	1.47	1.38	1.83
1921	1.18	1.15	1.22	1.10	1.09	1.09	1.13	1.29	1.34	1.35	1.34	1.17	1.20
1922	1.13	1.04	1.04	1.13	1.17	1.17	1.14	1.15	1.16	1.20	1.16	1.04	1.13
1923	.96	1.01	1.09	1.12	1.09	1.09	1.13	1.11	1.09	1.04	1.06	1.08	1.05
1924	1.20	1.19	1.20	1.37	1.43	1.62	1.82	1.81	1.71	1.51	1.63	1.60	1.35
1925	1.54	1.64	1.58	1.58	1.63	1.72	1.78	1.71	1.61	1.59	1.55	1.53	1.63
1926	1.37	1.31	1.32	1.39	1.37	1.38	------	------	------	------	------	------	--------

Division of Statistical and Historical Research. Data, 1899–1908, available in 1924 Yearbook, pp. 582–583, Table 32.

[2] Average of daily prices weighted by car-lot sales

[5] Compiled from Kansas City Daily Price Current. Since November, 1920, Kansas City Grain Market Review.

Table 23.—*Wheat, No. 1 northern spring: Average price per bushel of daily cash closing prices at Winnepeg, 1909–1926*

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb.	Mar.	Apr.	May	June	Average
Average	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls.*	*Dolls*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls*	*Dolls*	*Dolls.*
1909–1913	1.08	1.06	0.99	0.93	0.91	0 89	0 92	0.93	0.93	0.95	0.97	0.97	0 .96
1914–1920	1.78	1.84	1.88	1.84	1.85	1.80	1.85	1.84	1.85	1.92	2.00	1.94	1.86
1921–1925	1.40	1.39	1.23	1.18	1.23	1.27	1.32	1.38	1.33	1.34	1.40	1.36	1.32
1909	1.31	1.19	1.00	.97	.97	.98	1.03	1 03	1.04	1 03	.98	.93	1.04
1910	1.08	1.07	1.03	.98	.92	.90	.94	.93	.90	.90	.95	.97	.96
1911	.95	1.01	1.01	1.00	.99	.95	.95	.97	.98	1.01	1.04	1.06	.99
1912	1.07	1.06	1.00	.91	.85	.80	.82	.84	.85	.89	.93	.96	.92
1913	.97	.95	.89	.81	.83	.84	.85	.88	.90	.90	.93	.94	.89
1914	.90	1.08	1.13	1.11	1.18	1.18	1.36	1.53	1 49	1 57	1.61	1.32	1.29
1915	1.35	1.25	.95	.96	1.02	1.07	1.22	1 26	1.10	1 15	1.17	1.11	1.13
1916	1.18	1.49	1.59	1.72	1.93	1.76	1 80	1.68	1 85	2.33	2.75	2.49	1.88
1917	2.34	2.40	2.25	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.24
1918	2.21	2.21	2.24	2.24	2.24	2.24	2.24	2.24	2 24	2.24	2.24	2.24	2.24
1919	2.16	2 15	2.53	2.53	2.52	2.44	2.40	2.31	2 36	2.40	2 38	2.32	2.38
1920	2.33	2.33	2.45	2.11	1.84	1.67	1.71	1 66	1.68	1.57	1.67	1.69	1.89
1921	1.64	1.56	1.33	1.04	1.02	1.05	1.08	1.31	1.37	1 40	1.44	1.31	1.30
1922	1.35	1.17	.99	1.01	1.10	1.08	1.07	1.10	1.10	1.19	1.15	1.12	1.12
1923	1.06	1.11	1.04	.96	.96	.91	.94	.97	.95	.96	1.03	1.12	1.00
1924	1.35	1.42	1.42	1.60	1.64	1.73	1.96	1.97	1.76	1.56	1.82	1.71	1.66
1925	1.62	1.67	1.38	1.27	1.42	1.57	1.56	1.55	1.48	1.57	1.54	1.53	1.51
1926	1.59	1.51	1.44	1.43	1.41	1.34	------	------	------	------	------	------	--------

Division of Statistical and Historical Research. Compiled from Winnepeg Farmers' Advocate, July, 1909–September, 1923; November, 1923–December, 1926, from Minneapolis Daily Market Record.

Table 24.—*Wheat: Weighted average price [1] per bushel of reported cash sales of all classes and grades at Chicago and four markets combined, 1918–1926*

CHICAGO

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June	Weighted average
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Av. 1921–1925	124.2	122.9	118.5	122.8	125.7	135.3	139.8	143.6	137.5	135.0	137.6	130.3	126.2
1918	225.0	223.0	220.6	220.6	220.6	223.2	222.3	220.1	230.8	250.0	252.5	232.8	223.0
1919	223.9	222.2	221.9	225.7	242.0	249.5	272.2	235.5	242.0	289.8	295.8	280.5	226.1
1920	264.9	248.8	249.8	209.9	180.7	173.4	178.6	171.9	157.3	139.7	156.5	142.7	216.3
1921	124.1	119.8	124.4	112.0	107.9	110.5	112.7	128.6	129.7	132.4	132.7	115.9	121.6
1922	113.4	107.0	104.5	113.4	119.0	123.6	117.6	120.6	120.0	124.8	119.3	109.3	112.2
1923	99.1	99.6	101.0	106.8	103.1	105.3	108.6	110.3	109.7	106.1	107.8	113.7	102.5
1924	129.4	125.7	121.5	142.7	145.0	165.3	184.3	186.8	168.9	146.6	166.0	161.6	135.7
1925	155.0	162.4	141.3	139.0	153.5	171.7	175.7	171.7	159.4	164.[illegible]	162.0	150.8	159.0
1926	145.5	131.4	125.8	126.3	122.6	128.5	------	------	------	------	------	------	------

FOUR MARKETS COMBINED [3]

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June	Weighted average
Av. 1921–1925	124.5	123.7	125.1	127.7	129.7	135.5	141.6	143.5	140.3	137.3	138.6	133.9	130.6
1918	221.2	219.9	218.5	218.3	219.4	220.6	220.7	221.3	232.4	249.2	251.7	238.2	221.7
1919	223.1	221.0	223.6	229.3	246.5	258.8	267.9	240.1	248.6	278.2	292.3	277.0	241.8
1920	270.6	247.3	240.6	205.8	175.1	167.2	172.4	163.2	154.3	135.3	147.6	144.1	193.3
1921	122.9	121.7	128.5	117.3	113.1	113.8	115.8	131.4	136.1	138.5	135.0	122.5	123.7
1922	117.1	107.6	108.6	113.4	120.0	121.3	118.3	120.0	120.4	125.0	122.2	112.6	116.0
1923	99.8	102.7	109.5	112.6	107.3	106.4	111.4	112.7	112.6	111.0	111.6	117.9	108.5
1924	126.2	124.6	128.3	145.0	148.9	166.4	189.5	185.9	174.0	153.4	167.4	163.7	145.6
1925	156.6	161.9	150.7	150.0	159.1	169.7	173.0	167.4	158.5	158.8	157.0	153.0	159.1
1926	142.1	135.9	137.7	142.2	138.5	139.0	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from daily trade papers of markets named.

[1] The prices in this table are comparable with farm prices in that the farm prices are averages of the several prices reported which cover all classes and grades sold from the farm.
[2] Average of daily prices weighted by car-lot sales.
[3] Markets are Chicago, Minneapolis, Kansas City, and St. Louis.

Table 25.—*Wheat, good average quality imported red: Average spot price per bushel of 60 pounds at Liverpool, 1914–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Aver.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Av., 1914–1920	1.96	1.98	2.05	2.07	2.05	1.98	1.96	2.01	1.99	2.04	2.08	2.09	2.02
1914	1.02	1.04	1.07	1.07	1.11	1.09	1.05	1.28	1.29	1.28	1.38	1.47	1.18
1915	1.67	1.95	1.91	1.94	1.98	1.65	1.63	1.61	1.67	1.71	1.59	1.73	1.75
1916	1.94	1.90	2.00	1.93	1.71	1.55	1.58	1.96	2.00	2.15	2.22	2.39	1.94
1917	2.39	2.43	2.42	2.46	2.46	2.40	2.50	2.50	2.38	2.26	2.26	2.26	2.40
1918	2.32	2.32	2.39	2.32	2.32	2.32	2.32	2.32	2.32	2.39	2.46	2.46	2.36
1919	2.46	2.46	2.43	2.41	2.41	2.39	2.29	2.21	2.16	2.16	2.11	1.95	2.29
1920	1.90	1.75	2.11	2.37	2.34	2.40	2.34	2.20	2.13	2.34	2.53	2.39	2.23
1921	2.33	2.14	2.14	2.13	2.18	1.96	1.71	1.59	1.56	1.31	1.26	1.37	1.81
1922	1.37	(1)	1.58	1.58	1.59	1.44	1.49	1.35	1.29	1.44	1.52	1.54	1.47
1923	1.42	1.41	1.40	1.46	(1)	(1)	(1)	1.26	1.22	1.23	1.25	(1)	------
1924	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	1.61	1.74	1.77	1.88	------
1925	2.10	2.14	1.99	1.75	1.86	1.76	1.59	1.94	(1)	1.61	1.64	------	------
1926	(1)	(1)	(1)	1.82	1.86	1.85	(1)	1.70	1.79	1.83	1.83	1.80	------

Division of Statistical and Historical Research. Compiled from Broomhall's 1921 Yearbook, 1914–1920; from Corn Trade News, 1921 to date. Conversions at current exchange rate.

[1] No quotations.

TABLE 26.—*Wheat-ground and wheat-milling products, by months*

Year and month	Mills reporting	Wheat ground	Production		Daily (24-hour) capacity in wheat flour	Percentage of total capacity operated
			Wheat flour	Wheat-grain offal		
1925	*Number*	*Bushels*	*Barrels*	*Pounds*	*Barrels*	*Per cent*
July	1,047	40,050,566	8,840,278	708,349,042	649,201	52.4
August	1,037	42,817,865	9,292,632	754,446,245	642,257	55.6
September	1,050	45,952,321	9,938,279	833,270,479	644,803	61.7
October	1,051	49,799,488	10,727,834	907,390,215	652,136	60.9
November	1,052	42,415,875	9,128,113	769,373,238	649,398	56.2
December	1,044	41,655,786	8,948,322	756,198,349	648,149	53.1
1926						
January	1,046	40,358,021	8,679,028	728,835,001	647,340	53.6
February	1,038	34,573,012	7,429,297	625,502,752	645,784	50.0
March	1,046	38,027,091	8,288,698	685,314,389	647,766	47.4
April	1,042	35,233,902	7,589,263	633,082,457	650,642	44.9
May	1,042	34,656,811	7,418,410	626,188,473	648,316	44.0
June	1,038	37,250,730	8,004,972	668,392,252	646,406	45.6
Total		483,391,468	104,285,121	8,695,792,892		

COMPARATIVE STATEMENT FOR 975 IDENTICAL MILLS WHICH REPORTED EACH MONTH [1]

Year and month	Wheat ground	Production		Average pounds of wheat per barrel of flour	Average pounds of offal per bushel of wheat	Daily (24-hour) capacity in wheat flour	Percentage of total capacity operated
		Wheat flour	Wheat-grain offal				
1925	*Bushels*	*Barrels*	*Pounds*	*Number*	*Number*	*Barrels*	*Per cent*
July	40,287,082	8,762,695	701,726,966	275.9	17.4	631,900	53.3
August	42,396,728	9,203,047	746,729,469	276.4	17.6	625,741	56.6
September	45,406,202	9,827,078	824,473,513	277.6	18.1	626,026	62.8
October	49,028,561	10,562,226	893,438,238	278.5	18.2	630,835	62.0
November	41,681,234	8,971,407	755,727,595	278.8	18.1	626,327	57.3
December	40,923,887	8,789,592	742,992,875	279.4	18.2	626,843	53.9
1926							
January	39,691,076	8,535,126	716,010,838	279.0	18.0	625,479	54.6
February	34,080,503	7,324,613	616,258,084	279.2	18.1	624,703	51.0
March	37,035,003	8,074,312	667,572,276	275.2	18.0	621,090	48.1
April	34,662,367	7,464,504	622,897,935	278.6	18.0	627,191	45.8
May	34,026,750	7,283,171	614,269,348	280.3	18.1	624,675	44.8
June	36,773,552	7,903,176	659,431,451	279.2	17.9	623,610	48.7
Total	476,052,945	102,700,947	8,561,528,588				

Division of Statistical and Historical Research. Compiled from Bureau of Census monthly reports on wheat-milling products.

[1] These mills produced approximately 87 per cent of the total wheat flour reported in 1923.

TABLE 27.—*Flour, wheat, spring patents: Average wholesale price per barrel at Minneapolis, 1909–1926*

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1909–1913	5.48	5.27	5.00	4.94	4.81	4.76	4.88	4.88	4.87	4.81	4.94	4.98	4.97
1914–1920	9.52	9.87	9.37	9.24	9.17	9.27	9.61	9.42	9.42	9.97	10.54	10.15	9.63
1921–1925	7.99	7.73	7.56	7.51	7.50	7.79	8.03	8.18	8.00	7.95	8.01	7.87	7.84
1909	6.21	5.89	5.14	5.29	5.22	5.48	5.58	5.45	5.52	5.38	5.42	5.33	5.49
1910	6.20	5.79	5.75	5.21	5.03	5.01	5.28	4.91	4.75	4.64	4.89	4.81	5.10
1911	4.88	4.88	4.98	5.25	5.05	5.05	5.00	5.10	5.10	5.10	5.43	5.60	5.12
1912	5.43	5.24	4.68	4.63	4.59	4.13	4.26	4.43	4.43	4.43	4.43	4.63	4.61
1913	4.66	4.57	4.45	4.33	4.18	4.15	4.26	4.52	4.54	4.51	4.51	4.51	4.43
1914	4.62	5.78	6.02	5.58	5.79	6.01	6.86	7.54	7.16	7.61	7.41	6.78	6.43
1915	6.78	6.42	5.13	5.23	5.28	5.98	6.23	6.13	5.70	5.90	5.79	5.29	5.82
1916	5.68	7.69	8.26	9.08	9.56	8.60	9.00	8.45	9.44	11.33	14.09	13.08	9.52
1917	12.86	13.22	11.15	10.84	10.24	10.07	9.85	10.05	9.89	[illegible]	9.42	9.89	10.62
1918	10.45	10.53	10.49	10.44	10.41	10.44	10.42	10.69	11.22	[illegible]	12.52	12.00	10.98
1919	12.15	12.13	11.54	12.03	13.20	14.48	14.97	13.73	13.41	14.69	15.49	14.64	13.54
1920	14.12	13.33	13.02	11.45	9.74	9.28	9.94	9.38	9.10	8.30	9.04	9.40	10.51
1921	9.27	8.34	8.62	7.67	7.30	7.26	7.33	8.17	8.27	8.46	8.32	7.71	8.07
1922	7.95	7.22	6.68	6.76	6.88	6.86	6.71	6.72	6.72	7.00	6.80	6.35	6.89
1923	6.21	6.37	6.45	6.43	6.21	6.30	6.44	6.51	6.49	6.56	6.83	7.12	6.49
1924	7.72	7.69	7.52	8.19	8.22	9.03	9.80	10.02	9.34	8.54	9.12	8.86	8.67
1925	8.78	9.04	8.52	8.52	8.81	9.52	9.85	9.46	9.19	9.20	9.00	9.32	9.10
1926	9.27	8.50	7.87	8.08	7.85	8.02							

Division of Statistical and Historical Research. Compiled from the Minneapolis Daily Market Record.

TABLE 28.—*Flour, wheat: Retail price per pound in leading cities of the United States, 1913–1926*

Year	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Average:													
1914–1920	5.4	5.6	5.6	5.8	6.2	6.1	5.9	6.0	6.0	5.9	5.9	5.8	5.9
1921–1925	5.4	5.5	5.5	5.4	5.3	5.3	5.3	5.3	5.2	5.2	5.2	5.2	5.3
1913	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
1914	3.2	3.3	3.3	3.3	3.3	3.3	3.2	3.5	3.7	3.7	3.7	3.7	3.4
1915	4.1	4.5	4.5	4.5	4.6	4.3	4.1	4.1	3.9	3.7	3.7	3.8	4.2
1916	3.9	4.1	4.0	3.9	3.9	3.9	3.8	4.4	4.9	5.1	5.7	5.5	4.4
1917	5.6	5.6	5.8	6.8	8.8	8.1	7.3	7.6	7.4	7.1	6.9	6.8	7.0
1918	6.6	6.6	6.6	6.6	6.6	6.7	6.7	6.8	6.8	6.7	6.7	6.7	6.7
1919	6.6	6.7	6.8	7.2	7.5	7.5	7.5	7.4	7.3	7.3	7.4	7.7	7.2
1920	8.1	8.1	8.0	8.1	8.7	8.8	8.7	8.4	8.3	7.8	7.3	6.6	8.1
1921	6.7	6.5	6.4	5.9	5.7	5.9	5.8	5.7	5.6	5.4	5.1	5.0	5.8
1922	4.9	5.1	5.3	5.3	5.3	5.3	5.2	5.1	4.9	4.8	4.8	4.9	5.1
1923	4.9	4.9	4.8	4.9	4.8	4.8	4.7	4.5	4.5	4.6	4.6	4.5	4.7
1924	4.5	4.6	4.6	4.6	4.6	4.6	4.8	5.1	5.1	5.3	5.4	5.6	4.9
1925	6.0	6.4	6.4	6.2	6.1	6.1	6.1	6.1	6.1	5.9	6.0	6.1	6.1
1926	6.2	6.3	6.2	6.1	6.1	6.1	6.0	6.0	5.8	5.7	5.7	5.6	6.0

Division of Statistical and Historical Research. Compiled from Bureau of Labor Statistics reports.

TABLE 29.—*Bread: Average retail price per pound (baked weight) in leading cities of the United States, 1913–1926*

Year	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1914–1920	8.3	8.4	8.4	8.5	8.7	8.8	8.9	8.9	9.0	9.0	9.0	8.8	**8.7**
1921–1925	9.2	9.2	9.2	9.2	9.1	9.1	9.1	9.1	9.0	9.0	9.0	8.9	**9.1**
1913	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	**5.6**
1914	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.3	6.4	6.4	6.4	6.5	**6.3**
1915	6.8	7.1	7.1	7.1	7.2	7.2	7.1	7.1	7.0	7.0	6.9	6.9	**7.0**
1916	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.7	8.1	8.4	7.8	**7.3**
1917	7.9	8.0	8.1	8.4	9.5	9.6	9.9	10.2	9.9	9.9	9.9	9.3	**9.2**
1918	9.4	9.5	9.6	9.8	9.9	10.0	10.0	9.9	9.9	9.8	9.8	9.8	**9.8**
1919	9.8	9.8	9.8	9.8	9.8	9.9	10.0	10.1	10.1	10.1	10.2	10.2	**10.0**
1920	10.9	11.1	11.2	11.2	11.5	11.8	11.9	11.9	11.9	11.8	11.6	10.8	**11.5**
1921	10.8	10.6	10.5	10.3	9.9	9.8	9.7	9.7	9.6	9.5	9.3	9.1	**9.9**
1922	8.8	8.6	8.7	8.7	8.8	8.8	8.8	8.7	8.7	8.7	8.7	8.6	**8.7**
1923	8.7	8.7	8.7	8.7	8.7	8.7	8.8	8.7	8.7	8.7	8.7	8.7	**8.7**
1924	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.8	8.8	8.8	8.9	8.9	**8.8**
1925	9.2	9.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	**9.4**
1926	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	**9.4**

Division of Statistical and Historical Research. Compiled from Bureau of Labor Statistics reports.

TABLE 30.—*Bran, pure: Average price per ton in 100-pound sacks at Minneapolis, July, 1909–December, 1926*

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909–1913	19.48	20.19	19.92	19.47	19.78	20.68	21.89	21.85	21.54	20.73	20.28	18.68	**20.37**
1914–1920	28.55	29.64	28.26	26.99	28.40	29.60	31.23	30.29	30.61	31.41	30.26	27.99	**29.44**
1921–1925	19.64	20.82	21.58	22.68	24.38	25.92	26.29	25.50	24.74	24.54	23.79	21.23	**23.43**
1909	20.50	20.08	18.95	19.06	19.02	20.49	22.66	22.09	20.83	18.42	17.93	16.40	**19.70**
1910	19.62	19.89	18.54	17.99	19.23	21.17	21.73	21.25	20.82	21.43	21.48	19.62	**20.23**
1911	20.08	20.96	21.42	21.43	22.05	22.99	23.96	25.25	25.13	24.23	23.32	20.22	**22.59**
1912	20.82	19.25	19.13	19.01	18.48	18.51	19.53	18.03	17.21	16.25	16.58	16.94	**18.31**
1913	16.40	20.75	21.54	19.86	20.10	20.22	21.59	22.63	23.71	23.34	22.08	20.23	**21.04**
1914	18.36	22.21	21.71	19.69	20.89	21.54	22.31	22.69	21.17	22.45	19.86	19.62	**21.04**
1915	20.42	20.06	18.18	18.19	19.96	18.41	18.78	20.08	18.53	18.62	18.99	18.32	**19.04**
1916	17.67	20.00	21.95	24.45	27.07	25.93	28.75	28.64	34.17	38.57	34.20	26.65	**27.34**
1917	32.29	31.80	30.26	30.64	33.30	38.62	32.50	32.50	32.85	33.04	31.09	30.70	**32.47**
1918	26.00	29.31	29.06	28.46	27.80	32.94	47.26	42.83	38.09	39.56	37.88	34.86	**34.46**
1919	37.26	41.99	37.66	36.89	37.97	41.58	41.98	42.67	46.70	50.25	53.18	50.74	**43.24**
1920	47.83	42.09	39.03	30.62	31.81	28.20	27.05	22.63	22.73	17.39	16.62	15.52	**28.46**
1921	14.83	15.49	14.53	13.60	19.75	21.75	22.16	25.41	24.58	23.06	21.77	16.05	**19.42**
1922	15.90	14.77	17.62	22.48	23.37	24.89	26.67	27.96	28.72	28.41	27.30	21.18	**23.27**
1923	20.35	24.89	28.50	28.54	26.34	25.28	25.56	24.40	23.37	21.64	18.59	20.04	**23.96**
1924	23.07	24.29	23.62	25.23	26.14	30.94	30.52	25.14	23.89	23.94	27.33	26.85	**25.91**
1925	24.05	24.64	23.61	23.56	26.31	26.74	26.53	24.57	23.16	25.65	23.96	22.02	**24.57**
1926	22.50	22.59	22.27	21.21	24.17	26.99	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from the Minneapolis Daily Market Record.

Table 31.—*Middlings, flour: Average price per ton in 100-pound sacks at Minneapolis, July, 1909–December, 1926*

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1909–1913	24.38	25.36	25.25	24.65	24.04	23.74	24.10	24.53	24.10	23.64	23.46	23.43	24.22
1914–1920	38.56	40.62	38.71	35.74	35.40	35.63	37.36	36.25	36.32	36.99	37.42	36.77	37.15
1921–1925	26.57	26.85	26.72	27.17	27.25	27.90	28.85	28.22	27.74	27.57	27.86	27.46	27.51
1909	25.22	25.78	23.59	23.50	23.15	23.58	24.92	24.98	24.10	23.00	22.82	21.96	23.88
1910	23.90	24.56	23.74	23.15	23.00	23.56	23.41	23.54	22.82	23.05	23.25	23.25	23.44
1911	24.55	26.19	26.73	26.04	26.25	26.25	26.13	27.25	26.79	26.50	26.48	26.23	26.28
1912	27.38	27.00	26.71	25.62	23.55	22.30	22.50	22.36	21.78	20.67	19.72	20.96	23.38
1913	20.83	23.29	25.49	24.93	24.26	22.99	23.55	24.50	24.99	24.96	25.04	24.75	24.13
1914	24.86	27.54	27.23	26.06	26.78	27.58	28.94	27.86	26.17	26.64	27.33	27.48	27.04
1915	29.57	29.93	25.71	23.21	22.48	22.89	23.26	25.94	24.76	24.00	24.04	23.56	24.95
1916	23.22	26.79	28.76	31.94	34.99	34.23	35.75	34.24	38.85	42.29	41.70	42.74	34.58
1917	49.00	50.38	44.89	45.79	46.02	45.35	41.50	41.50	41.53	41.4[illegible]	37.08	32.86	43.11
1918	27.35	30.66	30.44	29.90	29.32	37.82	53.30	46.08	43.46	4[illegible].58	50.71	49.70	39.51
1919	53.22	58.33	57.72	52.68	49.72	50.81	51.57	53.32	54.31	[illegible]7.72	61.47	61.06	55.16
1920	62.70	60.68	56.20	40.58	38.52	30.71	27.20	24.82	25.66	21.49	19.64	20.00	35.68
1921	20.13	21.06	21.16	20.62	22.00	23.38	23.25	26.58	28.26	26.29	25.76	23.21	23.48
1922	23.58	22.82	22.40	25.45	25.92	26.61	28.24	29.43	30.30	30.56	31.38	29.90	27.22
1923	28.94	29.09	30.07	30.37	27.85	26.86	27.60	27.20	25.79	24.88	23.15	24.47	27.19
1924	28.58	29.56	29.99	31.60	31.83	34.84	36.57	31.33	28.84	29.19	33.24	33.50	31.59
1925	31.60	31.70	29.98	27.81	28.64	27.82	28.58	26.56	25.53	26.92	25.77	26.20	28.09
1926	27.45	28.02	27.74	27.62	28.14	31.32							

Division of Statistical and Historical Research. Compiled from the Minneapolis Daily Market Record.

RYE

Table 32.—*Rye: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage harvested	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Farm value Dec. 1	Value per acre[1]	Chicago cash price per bushel No. 2[2]: December, Low	December, High	Following May, Low	Following May, High	Domestic exports including rye flour, fiscal year beginning July 1[3]
	1,000 acres	*Bush. of 56 lbs.*	*1,000 bushels*	*Cents*	*1,000 dollars*	*Dollars*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Bushels*
Average:											
1909–1913	2,236	16.1	36,093	70.9	25,583	11.44	72.4	77.0	75.2	83.9	888,200
1914–1920	4,330	14.4	62,234	128.9	80,218	18.53	137.0	151.4	152.9	184.4	26,357,532
1921–1925	4,899	13.9	68,007	76.7	52,172	10.65	92.2	103.5	85.8	96.0	32,879,546
1909	*2,196*	16.1	35,406	72.2	25,548	11.63	72	80	74	80	242,262
1910	2,185	16.0	34,897	71.5	24,953	11.42	80	82	90	113	40,123
1911	2,127	15.6	33,119	83.2	27,557	12.96	91	94	90	95½	31,384
1912	2,117	16.8	35,664	66.3	23,636	11.16	58	64	60	64	1,854,738
1913	2,557	16.2	41,381	63.4	26,220	10.25	61	65	62	67	2,272,492
1914	2,541	16.8	42,779	86.5	37,018	14.57	107½	112½	115	122	13,026,778
1915	3,129	17.3	54,050	83.4	45,083	14.41	94½	98½	96½	99½	15,250,151
1916	3,213	15.2	48,862	122.1	59,676	18.57	130	151	200	240	13,703,499
1917	4,317	14.6	62,933	166.0	104,447	24.19	179	185	180	260	17,186,417
1918	6,391	14.2	91,041	151.6	138,038	21.60	154	164	145½	173	36,467,450
1919	6,307	12.0	75,483	133.2	100,573	15.95	150	182	198	229	41,530,961
1920	4,409	13.7	60,490	126.8	76,693	17.39	144	167	135½	167	47,337,466
1921	4,528	13.6	61,675	69.7	43,014	9.50	84	90	97½	111	29,943,852
1922	6,672	15.5	103,362	68.5	70,841	10.62	83¼	92¼	72	83	51,662,968
1923	5,171	12.2	63,077	65.0	40,971	7.92	69¾	72¼	65¼	69½	19,901,719
1924	4,150	15.8	65,466	106.5	69,696	16.79	131¼	151¾	112½	127¼	50,242,278
1925	3,974	11.7	46,456	78.2	36,340	9.14	93¾	111¾	82	89¼	12,646,915
1926[4]	3,513	11.4	40,024	83.5	33,416	9.51	93	101			

Division of Crop and Livestock Estimates. Figures in italics are census returns.

[1] Based on farm price Dec. 1.
[2] Chicago Daily Trade Bulletin.
[3] Commerce and Navigation of the United States, 1909–1918 and the June issues of Monthly Summaries of Foreign Commerce, 1919–1926.
[4] Preliminary.

TABLE 33.—*Rye: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Massachusetts	3	-----	-----	-----	54	-----	-----	-----
Connecticut	5	1	1	-----	90	18	19	-----
New York	58	40	37	28	945	680	610	434
New Jersey	65	47	44	41	1,157	822	702	779
Pennsylvania	215	125	113	93	3,655	2,000	1,921	1,488
Ohio	84	55	55	50	1,302	880	825	875
Indiana	299	161	145	145	4,186	2,174	1,653	2,102
Illinois	230	100	80	83	3,450	1,450	1,104	1,245
Michigan	467	240	216	199	6,538	3,480	2,700	2,696
Wisconsin	342	332	256	256	5,062	5,644	3,789	3,840
Minnesota	912	669	448	367	12,312	14,718	5,824	4,954
Iowa	51	39	32	31	898	702	525	542
Missouri	26	20	22	24	325	270	264	310
North Dakota	1,329	1,368	1,587	1,222	10,298	20,520	15,870	9,287
South Dakota	304	245	177	88	3,496	3,430	1,682	546
Nebraska	132	189	205	253	1,584	2,740	2,522	2,606
Kansas	41	40	43	41	348	568	383	480
Delaware	6	4	5	4	86	54	75	60
Maryland	17	15	18	15	269	225	342	270
Virginia	42	36	36	43	504	414	432	580
West Virginia	10	10	10	12	100	112	130	156
North Carolina	75	71	80	104	780	639	920	1,352
South Carolina	7	7	7	8	74	77	74	112
Georgia	20	20	20	22	180	184	186	264
Kentucky	20	16	15	18	234	176	195	279
Tennessee	20	18	20	24	200	198	220	336
Alabama	1	-----	-----	-----	12	-----	-----	-----
Arkansas	1	1	1	1	9	11	11	11
Oklahoma	37	37	33	36	444	518	396	558
Texas	17	17	14	20	204	272	56	380
Montana	156	80	80	107	1,716	1,120	1,000	1,284
Idaho	14	3	3	3	266	30	60	46
Wyoming	24	44	57	51	312	440	684	714
Colorado	77	74	85	89	924	663	850	1,024
New Mexico	2	2	1	1	24	32	4	18
Utah	11	5	3	4	125	33	33	36
Washington	23	10	15	20	361	79	165	240
Oregon	37	9	10	10	555	90	140	130
United States	5,171	4,150	3,974	3,513	63,077	65,466	46,456	40,024

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 34.—*Rye: Yield per acre, by States, 1921–1926*

State	Av., 1921–1925	1921	1922	1923	1924	1925	1926	State	Av., 1921–1925	1921	1922	1923	1924	1925	1926
	Bus.	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*		*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*
Mass	-----	15.0	19.0	18.0	-----	-----	-----	W. Va	11.6	12.0	12.0	10.0	11.2	13.0	13.0
Conn	18.8	19.0	20.0	18.0	18.0	19.0	-----	N. C	9.2	7.0	8.0	10.4	9.0	11.5	13.0
N. Y	16.3	15.5	16.0	16.3	17.0	16.5	15.5	S. C	10.4	10.0	10.0	10.5	11.0	10.5	14.0
N. J	18.0	17.5	19.0	17.8	17.5	18.0	19.0	Ga	9.2	9.0	9.5	9.0	9.2	9.3	12.0
Pa	16.6	16.6	17.0	17.0	16.0	17.0	16.0	Ky	11.4	10.9	11.5	11.7	11.0	13.0	15.5
Ohio	14.7	13.0	14.2	15.5	16.0	15.0	17.5	Tenn	9.8	8.0	9.0	10.0	11.0	11.0	14.0
Ind	12.8	13.0	12.0	14.0	13.5	11.4	14.5	Ala	-----	12.0	5.0	12.0	-----	-----	-----
Ill	15.3	17.0	16.0	15.0	14.5	13.8	15.0	Ark	10.4	9.0	12.0	9.0	11.0	11.0	11.0
Mich	13.4	13.0	12.8	14.0	14.5	12.5	13.5	Okla	12.0	12.0	10.0	12.0	14.0	12.0	15.5
Wis	15.0	13.6	14.6	14.8	17.0	14.8	15.0	Tex	10.6	12.0	9.0	12.0	16.0	4.0	19.0
Minn	17.0	17.5	19.9	13.5	22.0	13.0	13.5	Mont	12.5	11.2	14.0	11.0	14.0	12.5	12.0
Iowa	17.6	16.1	19.7	17.6	18.0	16.4	17.5	Idaho	16.4	18.0	15.0	19.0	10.0	20.0	15.5
Mo	12.2	11.2	12.0	12.5	13.5	12.0	12.9	Wyo	14.0	21.0	14.0	13.0	10.0	12.0	14.0
N. Dak	12.0	11.0	16.1	7.8	15.0	10.0	7.6	Colo	10.8	11.5	9.0	12.0	9.0	10.0	11.5
S. Dak	13.8	16.0	18.0	11.5	14.0	9.5	6.2	N. Mex	10.2	14.0	4.8	12.0	16.0	4.0	18.0
Nebr	12.5	12.7	11.2	12.0	14.5	12.3	10.3	Utah	9.7	9.3	10.0	11.4	6.6	11.0	9.0
Kans	10.8	11.3	11.1	8.5	14.2	8.9	11.7	Wash	11.7	14.0	10.0	15.7	7.9	11.0	12.0
Del	13.6	11.0	14.1	14.4	13.5	15.0	15.0	Oreg	13.0	14.2	12.0	15.0	10.0	14.0	13.0
Md	15.8	14.0	15.2	15.8	15.0	19.0	18.0								
Va	11.6	11.0	11.5	12.0	11.5	12.0	13.5	U. S	13.8	13.6	15.5	12.2	15.8	11.7	11.4

Division of Crop and Livestock Estimates.

TABLE 35.—*Rye: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*

Country	Acreage: Average, 1909–1913 [1]	Acreage: Average, 1921–1925	Acreage: 1924	Acreage: 1925	Acreage: 1926, preliminary	Yield per acre: Average, 1909–1913 [1]	Yield per acre: Average, 1921–1925	Yield per acre: 1924	Yield per acre: 1925	Yield per acre: 1926, preliminary	Production: Average, 1909–1913 [1]	Production: Average, 1921–1925	Production: 1924	Production: 1925	Production: 1926, preliminary
NORTHERN HEMISPHERE															
NORTH AMERICA	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Canada	117	1,428	891	852	737	17.9	14.6	15.4	16.1	16.3	2,094	20,900	13,751	13,688	12,918
United States	2,236	4,899	4,150	3,974	3,513	16.1	13.9	15.8	11.7	11.4	36,093	68,007	65,466	46,456	40,024
Total	2,353	6,327	5,041	4,826	4,250	16.2	14.1	15.7	12.5	12.2	38,187	88,907	79,217	60,144	52,942
EUROPE															
Norway	37	28	25	22	22	26.3	27.9	25.5	27.9	30.3	973	780	637	614	667
Sweden	977	836	654	870	838	24.7	26.6	16.6	32.3	28.1	24,100	22,204	10,883	28,081	23,542
Denmark	636	535	466	530	516	30.0	24.6	22.4	25.9	25.2	19,104	13,163	10,435	13,745	12,991
Netherlands	557	500	489	490	487	29.5	31.4	31.8	33.1	22.7	16,422	15,698	15,560	16,231	11,059
Belgium	672	559	560	571	566	35.2	36.8	36.9	38.0	35.0	23,644	20,564	20,671	21,705	19,834
Luxemburg	26	18	16	16	17	25.0	19.4	19.0	22.5	21.9	651	349	304	360	373
France	3,095	2,196	2,196	2,147	2,122	17.0	18.5	18.3	20.3	15.7	52,501	40,645	40,241	43,663	33,310
Spain	1,988	1,802	1,820	1,846	1,858	13.9	15.4	14.4	16.2	14.6	27,636	27,721	26,281	29,880	27,090
Portugal	[2] 271	[3] 548	474			8.9	[3] 9.2	11.0			[4] (2,300)	[3] 5,038	5,208		
Italy	346	317	310	311	298	18.3	19.8	19.7	21.6	21.8	6,317	6,277	6,114	6,704	6,496
Switzerland	60	48	48	47	49	29.7	32.4	29.9	34.9	32.3	1,783	1,554	1,433	1,642	1,583
Germany	12,713	10,745	10,525	11,636	11,691	29.0	23.8	21.4	27.3	21.6	368,337	255,939	225,573	317,424	252,190
Austria	1,110	878	928	949	956	21.4	18.3	17.4	22.8	20.2	23,785	16,086	16,139	21,656	19,351
Czechoslovakia	2,605	2,115	2,005	2,091	2,085	24.4	24.7	22.3	27.8	23.8	63,538	52,201	44,735	58,098	49,712
Hungary	1,608	1,593	1,643	1,700	1,711	19.5	16.9	13.5	19.1	17.5	31,377	26,845	22,103	32,525	30,015
Yugoslavia	732	477	483	492	499	12.3	12.4	11.5	16.0	14.8	9,004	5,930	5,541	7,864	7,410
Greece	76	[2] 74				14.9	[2] 12.9				1,129	[2] 952			
Bulgaria	542	440	414	453	460	15.4	15.3	10.4	19.6	17.4	8,345	6,720	4,303	8,889	8,008
Rumania	[3] 1,286	692	671	668	730	[3] 16.1	12.1	8.9	12.0	15.4	[3] 20,644	8,371	5,963	7,997	11,243
Poland	12,127	10,909	10,860	12,118	11,990	18.1	18.4	13.2	21.2	16.5	218,943	200,194	143,884	257,412	197,272

[1] Where changes in boundary have occurred averages are estimates for territory within present boundaries.
[2] Three-year average.
[3] Four-year average.
[4] Estimated on the basis of acreage reported and an average yield of 8.9 bushels to the acre.

TABLE 35.—*Rye: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*—Continued

Country	Acreage: Average, 1909–1913 [1]	Acreage: Average, 1921–1925	Acreage: 1924	Acreage: 1925	Acreage: 1926, preliminary	Yield per acre: Average, 1909–1913 [1]	Yield per acre: Average, 1921–1925	Yield per acre: 1924	Yield per acre: 1925	Yield per acre: 1926, preliminary	Production: Average, 1909–1913 [1]	Production: Average, 1921–1925	Production: 1924	Production: 1925	Production: 1926, preliminary
NORTHERN HEMISPHERE—Continued															
EUROPE—continued	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Lithuania	1,749	1,355	1,328	1,339	1,108	13.9	16.9	13.8	19.5	12.4	24,283	22,942	18,295	26,116	13,743
Latvia	888	624	657	659	621	14.7	15.3	11.9	18.8	9.9	13,061	9,535	7,849	12,405	6,119
Estonia	486	[3] 394	394	382	336	16.7	16.4	13.8	18.8	13.2	8,129	6,448	5,451	7,187	4,444
Finland	589	578	564	579	534	17.8	19.6	20.0	23.6	19.7	10,490	11,317	11,260	13,684	10,514
Russia, European	58,604	53,293	61,322	62,481		12.1	10.7	10.3	12.3		710,842	572,113	630,459	[5] 770,651	[5] 847,965
Total, European countries reporting acreage and production all years shown	44,829	37,639	37,056	39,916	39,494	21.7	20.5	17.4	23.4	18.9	973,067	771,483	643,705	933,882	746,966
Estimated European total excluding Russia	45,240	38,330	37,680	40,610	40,170						[6] 978,030	778,920	651,390	941,010	753,540
ASIA															
Turkey		[7] 294		294			[7] 15.5		15.5			[7] 4,570		4,570	
Russia, Asiatic	2,451	[8] 4,902	4,515	5,289		10.1	[8] 9.6	10.8	8.5		24,663	[8] 46,972	48,631	[8] 44,853	[8] 49,354
Total Northern Hemisphere countries reporting acreage and production all years shown	47,182	43,966	42,097	44,742	43,744	21.4	19.6	17.2	22.2	18.3	1,011,254	860,390	722,922	994,026	799,008
Estimated Northern Hemisphere total excluding Russia and China	48,020	45,110	43,150	45,880	44,770						1,022,970	874,590	737,350	1,007,920	812,340
SOUTHERN HEMISPHERE															
Argentina	85	380	387	501	544	7.5	8.1	3.8	9.4	6.2	640	3,061	1,457	4,733	3,346
Chile	5	4	4	2		22.2	14.8	11.2			111	59	45	54	
Union of South Africa	108	[8] 144				6.7	[8] 1.6				724	[8] 237			

Australia	9	[2] 4	----------	----------	----------	12.7	[2] 14.8	----------	----------	----------	114	[2] 59	----------	----------	----------
New Zealand	[8] 4	[2] 1	2	----------	----------	[8] 28.5	[2] 28.0	17.0	----------	----------	[8] 114	[2] 28	34	----------	----------
Total Northern and Southern Hemisphere countries reporting acreage and production all years shown	47,267	44,346	42,484	45,243	44,288	21.4	19.5	17.1	22.1	18.1	1,011,894	863,451	724,379	998,759	802,354
Estimated world total excluding Russia and China	48,300	45,700	43,700	46,600	45,500	----------	----------	----------	----------	----------	[6] 1,025,000	879,000	740,000	1,014,000	817,000

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture except as otherwise stated. Figures are for crops harvested during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere.

Where changes in boundary have occurred averages are estimates for territory within present boundaries.

[2] Three-year average.

[3] Four-year average

[5] Revised estimate apportioned between European and Asiatic Russia at the same ratio as the preliminary estimate.

[6] The estimate for the 5-year period, 1909–1913, given in this table is somewhat larger than the figure obtained by averaging those 5 years in Table 36. This is because in the detailed table estimates for warring countries are for post-war boundaries, whereas in Table 36 they are for pre-war territory. As a result, in excluding Russia, which country lost territory in the war, a smaller area is excluded in the detailed table than in Table 36.

[7] One year only.

[8] Two-year average.

TABLE 36.—*Rye: World production, 1909–1926*

Year	Production for countries reporting all years	World production excluding Russia, preliminary	Total Europe excluding Russia, preliminary	Selected countries: United States	Russia[1]	Germany	France	Poland	Hungary	Czechoslovakia
	Million bushels	*Million bushels*	*Million bushels*	*Thousand bushels*	*Thousand bushels*	*Thousand bushels*	*Thousand bushels*	*Thousand bushels*	*Thousand bushels*	*Thousand bushels*
1909	803	868	822	35,406	903,622	446,746	55,689	-------	47,250	-------
1910	740	814	769	34,897	875,135	413,802	43,883	-------	51,789	-------
1911	753	824	780	33,119	768,650	427,796	46,749	-------	50,323	-------
1912	784	858	811	35,664	1,050,837	456,588	48,746	-------	53,194	-------
1913	817	889	835	41,381	1,011,316	481,169	50,065	-------	52,700	-------
1914	698	761	708	42,779	[2] 869,657	410,478	43,884	-------	45,437	-------
1915	622	687	621	54,050	[3] 909,943	360,310	33,148	-------	47,777	-------
1916	589	659	590	48,862	[4] 771,429	351,826	33,351	-------	-------	-------
1917	470	514	467	62,933	[4] 613,796	[5] 275,696	25,669	-------	-------	-------
1918	505	586	477	91,041	-------	[5] 262,832	[5] 30,160	-------	-------	-------
1919	479	682	587	75,483	-------	[5] 240,161	[5] 30,577	103,043	-------	-------
1920	429	615	534	60,490	[4] 367,583	[5] 194,255	[5] 34,492	73,659	[5] 20,561	32,911
1921	540	853	455	61,675	[4] 400,810	[5] 267,626	[5] 44,392	167,558	[5] 23,177	53,735
1922	523	864	383	103,362	[1] 568,312	[5] 206,033	[5] 38,412	197,372	[5] 25,147	51,097
1923	531	925	441	63,077	[4] 549,415	[5] 263,037	[5] 36,517	234,726	[5] 31,274	53,338
1924	470	740	390	65,466	[5] 679,090	[5] 225,573	[5] 40,241	143,884	[5] 22,108	44,735
1925	589	1,014	524	46,456	[5] 815,504	[5] 317,424	[5] 43,663	257,412	[5] 32,525	58,098
1926, preliminary	482	817	427	40,024	[5] 897,339	[5] 252,190	[5] 33,310	197,272	[5] 30,015	49,712

Division of Statistical and Historical Research. For each year is shown the production during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere. Estimates of world rye production for the period 1894–1908 appear in Agriculture Yearbook, 1924, p. 596.

[1] Includes all Russian territory reporting for the years shown.
[2] Exclusive of the 10 Vistula Provinces of Russian Poland and the Province of Batum in Transcaucasia.
[3] Exclusive of Russian Poland, Lithuania, parts of Latvia and the Ukraine, and the two Provinces of Batum and Elizabethpol in Transcaucasia.
[4] Estimate for the present territory of the Union of Socialist Soviet Republics exclusive of Turkestan, Transcaucasia, and the Far East, which territory in 1924 produced 8,046,000 bushels.
[5] Present boundaries, therefore not comparable with earlier years.

TABLE 37.—*Rye: Monthly marketings by farmers, as reported by about 3,500 mills and elevators, United States, 1917–1925*

Year beginning July	Percentage of year's receipts: July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Season
1917	2.8	14.8	20.5	17.1	11.3	7.6	5.8	6.4	7.6	3.4	1.7	1.0	100.0
1918	5.6	11.3	14.9	14.5	12.2	9.5	8.4	4.9	6.3	4.8	3.4	4.2	100.0
1919	8.2	15.0	13.3	12.4	7.8	9.1	8.5	4.7	6.2	6.4	4.3	4.1	100.0
1920	7.3	20.7	18.1	12.2	8.8	7.0	6.6	4.7	4.3	3.7	3.3	3.3	100.0
1921	13.9	20.8	17.6	10.6	6.3	5.9	4.5	4.8	4.9	4.0	4.2	2.5	100.0
1922	10.7	20.5	14.8	12.3	10.2	8.7	6.5	5.3	4.0	2.9	2.2	1.9	100.0
1923	5.3	18.8	19.2	14.2	9.4	8.5	5.4	5.9	3.5	2.5	3.0	4.3	100.0
1924	3.9	16.9	25.4	23.3	10.7	7.0	5.0	3.1	1.7	1.0	1.2	.8	100.0
1925	5.2	19.2	23.3	12.4	8.7	8.9	6.6	4.6	3.1	2.4	2.8	2.8	100.0

Division of Crop and Livestock Estimates.

TABLE 38.—*Rye: Receipts at markets named, averages by groups, 1909–1925, and annual, 1921–1925*

[Thousand bushels—i. e., 000 omitted]

Year beginning July	Minneapolis	Duluth	Chicago	Milwaukee	Omaha	Total, five markets	Fort William and Port Arthur[1]
Average:							
1909–1913	3,579	1,090	2,213	1,950			
1914–1920	8,967	8,944	5,267	3,664			
1921–1925	9,904	25,380	5,957	2,461	1,281	44,983	6,856
1921	4,754	17,446	4,235	2,282	2,048	30,765	5,297
1922	15,111	42,619	7,585	3,241	1,916	70,472	11,552
1923	13,336	16,922	2,952	1,449	736	35,395	6,837
1924	8,447	38,818	12,586	4,455	983	65,289	5,265
1925	7,872	11,097	2,426	876	723	22,994	5,329
Monthly average, 1921–1925.							
July	376	784	718	83			
August	1,248	3,225	762	229			
September	1,399	6,338	335	175	185	8,431	1,618
October	1,399	4,335	501	305	227	6,768	1,163
November	739	2,426	1,168	193	131	4,657	946
December	943	1,654	367	232			656
January	1,803	1,103	352	219			281
February	548	818	350	242	100	2,058	110
March	474	1,055	219	143			177
April	391	904	275	109			262
May	281	1,449	715	106			520
June	393	1,289	195	425			304
July							299
August							519

Division of Statistical and Historical Research. Compiled from Minneapolis Daily Market Record, Chicago Daily Trade Bulletin, Grain Dealers Journal, and Canadian Statistics. Data, 1909–1920, available in 1925 Yearbook, p. 784, Table 54

[1] Crop year begins in September.

TABLE 39.—*Rye: Classification of cars graded by licensed inspectors, all inspection points, 1923–1925*

Year beginning July 1	Receipts						Shipments					
	1	2	3	4	Sample	Total	1	2	3	4	Sample	Total
1923–24[1]												
Cars	14,394	13,532	3,872	1,061	473	33,332	22,068	8,481	132	89	26	30,796
Per cent	43.2	40.6	11.6	3.2	1.4	100	71.7	27.5	.4	.3	.1	100
1924–25												
Cars	27,977	24,251	8,841	2,957	876	64,902	31,838	38,210	698	131	69	70,946
Per cent	43.1	37.4	13.6	4.6	1.3	100	44.9	53.8	1.0	.2	.1	100
1925–26												
Cars	3,969	11,730	5,111	1,794	494	23,098	3,715	14,807	457	124	30	19,133
Per cent	17.2	50.8	22.1	7.8	2.1	100	19.4	77.4	2.4	.6	.2	100

Grain Division.

[1] First complete year of inspection.

TABLE 40.—*Rye, including flour: International trade, average 1910–1914, annual 1924–1926*

[Thousand bushels—i. e., 000 omitted]

Country	Year ended June 30: Average 1910-1914		1924		1925		1926 preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Algeria	([1] [2])			[1] 20	([1] [2])	[3] 43		[3] 48
Argentina	([1] [2])	[4] 273		3,092		1,693		1,812
Bulgaria		[1] 1,925		[1] 129	[1] 15	84		59
Canada	65	58	21	8,596	28	5,875	23	5,768
Hungary	[1] 140	[1] 14,150	([2])	4,837	13	5,196	1	6,913
Poland			[1] 2	[1] 2,482	[1] 2,582	[3] 2,211	5,266	7,424
Rumania	[1] [5] 26	[1] 2,992	([2])	[8] 1,203	([2])	477		99
Russia	[1] 5,381	[1] 33,979		53,331		2,579		7,094
Spain		33		2	([2])	1	18	([2])
United States		888		19,902		50,242		12,647
Yugoslavia				[1] 14		[3] 246		[3] 235
PRINCIPAL IMPORTING COUNTRIES								
Austria	[1] 1,469	[1] 2	5,892	[1] 38	4,180	[1] [6] 15	4,020	[3] [7] 157
Belgium	5,755	830	1,554	244	1,117	847	1,915	91
Czechoslovakia			4,827	[8] 1,730	8,730	[8] 128	8,168	102
Denmark	[1] 8,753	[1] 288	10,231	510	7,002	532	8,612	425
Estonia			[3] [6] 1,443		[3] 1,483		[3] 1,921	
Finland			10,563	10	6,310	13	6,471	7
France	3,316	[4] 26	2,776	1,065	1,306	479	894	124
Germany	16,226	43,936	24,940	63	22,057	5,413	9,149	15,963
Greece			[1] 5		[3] 6			
Italy	654	2	230	237	24	387	493	23
Latvia			[3] 2,181	[1] 1	[3] 1,981	[1] 152	[3] 2,648	[1] [7] 61
Netherlands	[1] 29,557	[1] 17,889	9,432	2,978	6,376	2,913	6,046	434
Norway	[1] 10,644	[1] [9] 51	8,097		7,502		7,846	
Portugal	[1] 174	([1] [2])						
Sweden	[1] 3,940	[1] 59	4,051	157	4,815	28	1,456	98
Switzerland	[1] 728	[1] 1	14	([2])	35	1	85	([2])
United Kingdom [10]	2,120	7	1,508	240	1,559	76	1,167	165
Total, 28 countries	88,948	117,389	88,367	100,911	77,121	79,551	66,199	59,749

Division of Statistical and Historical Research. Official sources except where otherwise noted.

[1] Year ended July 31, International Yearbook of Agricultural Statistics.
[2] Less than 500 bushels.
[3] International Crop Report and Agricultural Statistics.
[4] Average of calendar years, 1909–1913.
[5] Average for the seasons 1911-12 to 1913-14.
[6] Eleven months.
[7] Ten months.
[8] Rye figures from International Yearbook of Agricultural Statistics.
[9] Season 1913–14.
[10] Year ended Dec. 31.

TABLE 41.—*Rye: Estimated price per bushel, received by producers, United States, 1909–1926*

Year beginning July	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted av.
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Average:													
1909–1913	74.7	72.4	71.7	72.0	71.7	71.3	72.1	72.2	72.0	72.4	72.8	72.9	72.1
1914–1920	129.2	127.3	126.8	125.8	124.6	125.9	129.0	131.1	135.6	142.1	143.4	139.1	129.3
1921–1925	78.5	77.8	74.3	77.1	76.9	80.7	83.9	85.4	83.0	78.4	78.6	76.9	78.8
1909	80.1	75.4	72.6	73.2	72.7	73.3	75.4	76.3	76.6	75.8	74.8	74.7	74.6
1910	74.5	74.2	73.4	72.2	71.6	72.4	73.2	72.5	73.6	75.6	76.8	77.4	73.4
1911	76.2	76.2	78.3	81.4	83.2	83.0	83.6	84.2	84.6	84.8	85.4	84.8	81.0
1912	80.8	74.4	70.4	69.4	67.6	65.0	66.4	66.0	63.0	62.6	63.2	63.6	68.7
1913	62.0	61.8	63.9	64.0	63.3	63.0	62.1	61.8	62.4	63.0	63.6	63.8	62.9
1914	62.0	68.2	77.2	79.6	83.3	88.4	95.4	103.0	102.9	101.2	100.0	95.9	83.3
1915	91.4	87.2	83.6	83.7	84.6	84.4	86.8	87.0	84.6	83.6	83.8	83.6	85.0
1916	83.4	91.6	101.9	109.7	118.7	120.3	121.0	124.8	130.8	149.[illegible]	173.6	180.0	113.0
1917	177.6	170.0	165.8	169.3	167.4	168.2	172.6	187.9	218.0	[illegible]	204.4	178.8	176.4
1918	166.9	161.6	156.6	153.3	152.1	151.2	145.6	136.3	139.9	150.6	149.6	141.2	152.1
1919	144.2	144.0	137.0	132.8	131.5	142.8	153.4	149.8	150.6	169.6	183.5	186.4	146.9
1920	178.8	168.8	165.6	152.2	134.4	125.8	128.1	128.8	122.4	112.0	108.8	108.0	148.2
1921	101.0	94.0	89.2	81.6	72.2	69.6	70.0	77.0	83.8	85.9	87.8	82.8	86.9
1922	74.0	66.9	63.2	65.2	68.2	70.7	71.7	71.0	70.1	70.8	69.2	62.2	68.1
1923	56.3	55.3	57.2	58.8	62.1	63.9	63.5	64.5	62.8	60.4	60.1	61.6	59.4
1924	68.8	79.8	80.1	105.7	108.6	112.7	126.2	132.2	125.1	100.9	103.6	101.8	96.3
1925	92.3	92.8	81.9	74.1	73.4	86.8	88.2	82.5	73.4	73.8	72.5	76.0	83.1
1926	80.7	86.1	81.6	82.4	83.0	82.4	------	------	------	------	------	------	--------

Division of Crop and Livestock Estimates. Mean of prices reported on 1st of month and 1st of succeeding month, July, 1909–December, 1923.

TABLE 42.—*Rye: Estimated price per bushel, received by producers, December 1, average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Mass	147	175	140	135	145	140	-----	W. Va	108	95	95	103	129	120	110
Conn	139	150	150	125	140	130	-----	N. C	137	125	120	135	149	157	125
N. Y	100	99	97	91	113	100	100	S. C	201	250	180	173	190	210	175
N. J	97	102	85	94	113	93	95	Ga	173	175	135	190	183	180	160
Pa	98	95	87	91	113	105	97	Ky	115	112	110	103	127	125	108
Ohio	89	84	83	78	111	88	88	Tenn	128	135	119	116	138	130	120
Ind	83	73	79	73	106	85	85	Ala	157	160	153	160	156	158	145
Ill	85	80	75	75	107	90	86	Ark	122	130	100	120	131	130	125
Mich	78	70	76	62	106	78	78	Okla	89	66	80	90	101	110	90
Wis	79	71	72	65	109	76	84	Tex	111	100	125	98	111	120	97
Minn	72	62	68	53	108	71	76	Mont	65	53	54	51	91	74	75
Iowa	78	73	70	66	102	80	82	Idaho	81	70	67	68	122	80	73
Mo	98	86	93	88	105	120	113	Wyo	66	58	52	66	88	64	67
N. Dak	67	58	60	48	104	65	73	Colo	67	60	66	56	85	67	71
S. Dak	67	58	58	49	102	67	73	N. Mex	92	70	100	90	100	100	85
Nebr	70	60	65	56	97	71	76	Utah	85	70	60	90	107	100	80
Kans	82	68	70	75	98	98	94	Wash	98	65	95	72	133	125	100
Del	109	100	105	96	125	120	110	Oreg	98	68	85	93	136	110	96
Md	107	92	110	97	122	114	105								
Va	109	95	90	107	128	127	112	U. S	77.6	69.7	68.5	65.0	106.5	78.2	83.5

Division of Crop and Livestock Estimates.

TABLE 43.—*Rye, No. 2: Weighted average price per bushel at Chicago, 1909–1926*

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Weighted average[1]
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909–1913	0.75	0.74	0.75	0.76	0.75	0.75	0.77	0.76	0.76	0.78	0.80	0.75	0.76
1914–1920	1.47	1.43	1.43	1.40	1.42	1.45	1.52	1.49	1.62	1.67	1.68	1.63	1.52
1921–1925	.91	.89	.88	.89	.91	.98	1.01	1.02	.93	.92	.91	.88	.94
1909	.79	.71	.72	.73	.74	77	.81	.81	.79	.79	.77	.76	.76
1910	.77	.75	.74	.76	.79	.81	.84	.82	.89	.95	1.02	.90	.84
1911	.84	.85	.91	.97	.95	.93	.94	.92	.91	.94	.93	.83	.91
1912	.74	.72	.69	.69	.64	.61	.64	.62	.60	.62	.62	.62	.65
1913	.63	.66	.67	.65	.64	.63	.61	.62	.61	.62	.65	.63	.64
1914	.64	.84	.95	.92	1.02	1.10	1.19	1.23	1.17	1.17	1.19	1.17	1.05
1915	1.08	1.00	.96	1.01	.99	.97	1.01	.97	.93	.96	.98	.98	.99
1916	.98	1.13	1.20	1.33	1.47	1.41	1.43	1.46	1.61	1.87	2.20	2.40	1.54
1917	2.27	1.90	1.86	1.84	1.78	1.82	2.01	2.39	2.84	2.64	2.20	1.80	2.11
1918	1.73	1.67	1.63	1.63	1.68	1.59	1.61	1.38	1.61	1.73	1.59	1.46	1.61
1919	1.55	1.54	1.40	1.38	1.42	1.66	1.76	1.56	1.72	1.99	2.13	2.27	1.70
1920	2.04	1.90	1.99	1.69	1.59	1.61	1.63	1.47	1.46	1.35	1.47	1.32	1.62
1921	1.27	1.07	1.04	.86	.79	.86	.81	.97	1.02	1.04	1.06	.90	.97
1922	.82	.73	.72	.78	.87	.88	.87	.86	.83	.86	.78	.70	.81
1923	.65	.67	.70	.72	.71	.70	.73	.72	.69	.66	.67	.76	.70
1924	.84	.93	1.03	1.26	1.31	1.41	1.57	1.57	1.28	1.12	1.19	1.13	1.25
1925	.97	1.05	.90	.83	.88	1.03	1.05	.97	.85	.91	.86	.92	.96
1926	1.05	1.01	.96	1.01	.98	.96	-----	-----	-----	-----	-----	-----	-----

Division of Statistical and Historical Research. Compiled from Chicago Daily Trade Bulletin.

[1] Average of daily prices weighted by carlot sales.

CORN

TABLE 44.—*Corn: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage	Average yield per acre	Production	Price per bushel received by producers, Dec. 1	Farm value Dec. 1	Value per acre[1]	Chicago cash price per bushel, No. 2 mixed[2]: December, Low	December, High	Following May, Low	Following May, High	Domestic exports including corn meal, fiscal year beginning July 1[3]	Imports, fiscal year beginning July 1[3]	Per cent of crop exported
Av.:	*1,000 acres*	*Bu. of 56 lbs. shelled*	*1,000 bushels*	*Cents*	*1,000 dollars*	*Dollars*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Bushels*	*Bushels*	*Per Cent*
1909–1913	104,229	26.0	2,712,364	56.6	1,533,961	14.73	57.5	62.7	61.4	66.6	41,409,255	2,664,771	1.5
1914–1920	104,999	27.0	2,831,758	95.8	2,713,268	25.84	103.9	118.6	118.6	135.2	45,289,120	5,693,428	1.6
1921–1925	102,626	27.8	2,850,904	67.8	1,931,750	18.82	75.2	87.3	78.2	86.2	66,759,111	1,148,475	2.3
1909	*98,383*	26.1	2,572,336	58.6	1,507,185	15.32	62½	66	56	63	38,128,498	------	1.5
1910	104,035	27.7	2,886,260	48.0	1,384,817	13.31	45½	50	52¼	55¼	65,614,522	------	2.3
1911	105,825	23.9	2,531,488	61.8	1,565,258	14.79	68	70	76¼	82½	41,797,291	53,425	1.7
1912	107,083	29.2	3,124,746	48.7	1,520,454	14.20	47½	54	55¼	60	50,780,143	903,062	1.6
1913	105,820	23.1	2,446,988	69.1	1,692,092	15.99	64	73½	67	72½	10,725,819	12,367,369	.4
1914	103,435	25.8	2,672,804	64.4	1,722,070	16.65	62¼	68¼	50½	56	50,668,303	9,897,939	1.3
1915	106,197	28.2	2,994,793	57.5	1,722,680	16.22	69½	75	69	78½	39,896,928	5,208,497	2.6
1916	105,296	24.4	2,566,927	88.9	2,280,729	21.66	88	96	152	174	66,753,294	2,267,290	1.6
1917	116,730	26.3	3,065,233	127.9	3,920,228	33.58	160	190	150	170	49,073,263	3,196,420	.9
1918	104,467	24.0	2,502,665	136.5	3,416,240	32.70	135	155	160½	185	23,018,822	3,311,211	.6
1919	97,170	28.9	2,811,302	134.5	3,780,597	38.91	142	160	189	217	16,728,746	10,229,249	2.2
1920	101,699	31.5	3,208,584	67.0	2,150,332	21.14	70¼	86	59	66	70,905,781	5,743,384	5.9
1921	103,740	29.6	3,068,569	42.3	1,297,213	12.50	46¾	51½	59½	65	179,490,442	124,591	5.8
1922	102,846	28.3	2,906,020	65.8	1,910,775	18.58	69½	77½	78	87½	96,596,221	137,529	3.3
1923	104,324	29.3	3,053,557	72.6	2,217,229	21.25	69¾	87	76¼	81	23,135,200	227,704	.8
1924	100,863	22.9	2,309,414	98.2	2,266,771	22.47	113	135½	107½	121½	9,791,136	4,617,319	.4
1925	101,359	28.8	2,916,961	67.4	1,966,761	19.40	77	85	69½	75¾	24,782,557	635,231	.8
1926[4]	99,492	26.6	2,645,031	64.4	1,703,430	17.12	70	79¼	-----	-----	-----	-----	-----

Division of Crop and Livestock Estimates. Figures in italics are census returns.

[1] Based upon farm price Dec. 1.
[2] Chicago Daily Trade Bulletin. Contract to 1915
[3] Compiled from Commerce and Navigation of U. S. 1909–1918, and June issues of Monthly Summaries of Foreign Commerce, 1919–1926.
[4] Preliminary.

TABLE 45.—*Corn: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1933	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Maine	18	12	12	13	684	516	540	546
New Hampshire	26	14	14	15	1, 092	672	700	705
Vermont	93	82	85	34	3, 627	3, 854	4 080	3, 948
Massachusetts	63	41	48	45	2, 709	1, 845	2, 150	2, 160
Rhode Island	12	8	9	9	456	320	405	432
Connecticut	76	52	54	54	3, 116	2, 236	2. 700	2, 700
New York	758	677	691	670	24, 559	23, 018	24, 876	23, 450
New Jersey	236	195	199	188	9, 440	6, 630	10, 348	8, 648
Pennsylvania	1, 541	1, 316	1, 408	1, 394	61, 640	48, 034	71, 808	57, 154
Ohio	3, 899	3, 432	3, 741	3, 591	159, 850	89, 232	179, 568	145, 430
Indiana	5, 003	4, 450	4, 672	4, 672	192, 616	113, 920	203, 232	170, 528
Illinois	8, 995	8, 946	9, 393	9, 205	337, 312	295, 218	394, 506	312, 970
Michigan	1, 686	1, 610	1, 642	1, 593	58, 167	45, 885	65, 680	54, 162
Wisconsin	2, 253	2, 185	2, 185	2, 119	83, 361	56, 810	101, 602	73, 106
Minnesota	4, 297	4, 595	4, 136	4, 343	154, 692	124, 065	148, 896	147, 662
Iowa	10, 776	10, 912	11, 234	11, 178	436, 428	305, 536	492, 648	413, 586
Missouri	6, 562	6, 300	6, 741	6, 404	196, 860	151, 200	198, 860	174, 180
North Dakota	842	1, 320	1, 056	1, 009	28, 207	28, 380	24, 816	18, 162
South Dakota	4, 208	4, 814	4, 478	4, 433	145, 176	102, 538	78, 365	79, 794
Nebraska	8, 244	8, 716	9, 100	8, 994	272, 052	191, 752	236, 600	139, 407
Kansas	5, 629	6, 021	6, 623	5, 563	122, 149	130, 656	109, 942	57, 290
Delaware	183	136	137	138	6, 057	3, 672	5, 069	4, 278
Maryland	642	527	554	554	25, 231	16, 337	24, 930	22, 049
Virginia	1, 914	1, 499	1, 681	1, 694	55, 506	31, 479	36, 982	46, 585
West Virginia	616	460	520	499	20, 944	11, 960	18, 980	16, 467
North Carolina	2, 603	2, 317	2, 400	2, 376	58, 568	41, 706	44, 400	52, 272
South Carolina	1, 980	1, 650	1, 584	1, 426	32, 670	19, 800	19, 483	22, 103
Georgia	4, 034	3, 975	3, 895	3, 817	49, 215	45, 712	41, 676	55, 346
Florida	820	600	580	551	10, 250	8, 100	8, 700	7, 714
Kentucky	3, 300	3, 048	3, 231	3, 069	94, 050	76, 200	85, 622	101, 277
Tennessee	3, 018	3, 100	3, 162	3, 099	73, 941	66, 650	63, 240	85, 222
Alabama	3, 150	2, 900	2, 797	2, 825	44, 100	36, 250	37, 760	45, 765
Mississippi	2, 327	2, 240	1, 977	1, 918	33, 742	26, 880	35, 586	36, 826
Arkansas	2, 000	2, 090	2, 006	2, 026	31, 000	33, 440	28, 084	41, 533
Louisiana	1, 604	1, 250	1, 225	1, 127	24, 702	14, 375	22, 050	19, 722
Oklahoma	3, 264	2, 862	2, 558	2, 353	37, 536	54, 378	19, 185	61, 178
Texas	5, 000	3, 913	2, 957	3, 844	92, 500	63, 088	25, 134	106, 863
Montana	365	420	399	359	9, 490	7, 560	6, 584	3, 949
Idaho	73	66	78	66	3, 066	2, 026	3, 198	2, 706
Wyoming	150	180	191	197	4, 050	2, 160	4, 393	3, 940
Colorado	1, 505	1, 450	1, 467	1, 496	37, 625	14, 500	22, 005	10, 472
New Mexico	221	220	175	221	3, 624	3, 960	3, 150	4, 420
Arizona	33	31	39	40	990	682	1, 014	1, 120
Utah	31	15	18	18	772	300	432	432
Nevada	1	2	2	2	23	45	50	48
Washington	74	43	58	49	2, 738	1, 290	2, 030	1, 715
Oregon	71	59	71	75	2, 485	1, 800	2, 059	2, 475
California	128	82	81	77	4, 480	2, 747	2, 843	2, 510
United States	104, 324	100, 863	101, 359	99, 492	3, 053, 557	2, 309, 414	2, 916, 961	2, 645, 031

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 46.—*Corn: Yield per acre, by States, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Bus.	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*		*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*
Me	43.4	50.0	41.0	38.0	43.0	45.0	42.0	N. C	19.7	19.2	20.0	22.5	18.0	18.5	22.0
N. H	47.2	53.0	43.0	42.0	48.0	50.0	47.0	S. C	14.3	16.0	14.5	16.5	12.0	12.3	15.5
Vt	46.2	55.0	42.0	39.6	47.0	48.0	47.0	Ga	12.3	15.0	12.0	12.2	11.5	10.7	14.5
Mass	45.2	48.0	40.0	43.0	45.0	50.0	48.0	Fla	13.8	14.0	14.0	12.5	13.5	15.0	14.0
R. I	41.8	46.0	40.0	38.0	40.0	45.0	48.0	Ky	26.7	25.6	28.0	[illegible]5	25.0	26.5	33.0
Conn	46.2	52.0	45.0	41.0	43.0	50.0	50.0	Tenn	23.0	25.8	23.0	24.5	21.5	20.0	27.5
N. Y	36.8	46.0	35.5	32.4	34.0	30.0	35.0	Ala	13.7	14.5	14.0	14.0	12.5	13.5	16.2
N. J	43.0	47.0	42.0	40.0	34.0	52.0	46.0	Miss	16.0	18.0	17.5	14.5	12.0	18.0	19.2
Pa	43.9	48.0	44.0	40.0	36.5	51.0	41.0	Ark	17.4	22.0	19.5	15.5	16.0	14.0	20.5
Ohio	39.0	41.0	39.0	41.0	26.0	48.0	40.5	La	16.3	19.5	17.0	15.4	11.5	18.0	17.5
Ind	36.1	36.0	37.0	38.5	25.6	43.5	36.5	Okla	16.2	25.0	18.0	11.5	19.0	7.5	26.0
Ill	36.4	34.0	35.5	37.5	33.0	42.0	34.0	Tex	17.6	25.2	20.0	18.5	16.0	8.5	27.8
Mich	35.5	39.0	35.3	34.5	28.5	40.0	34.0	Mont	21.0	20.6	24.3	26.0	18.0	16.5	11.0
Wis	40.0	46.2	44.5	37.0	26.0	46.5	34.5	Idaho	37.3	35.0	38.0	42.0	30.7	41.0	41.0
Minn	34.6	41.0	33.0	36.0	27.0	36.0	34.0	Wyo	21.6	22.0	24.0	27.0	12.0	23.0	20.0
Iowa	39.9	42.0	45.0	40.5	28.0	43.9	37.0	Colo	16.1	14.5	16.0	25.0	10.0	15.0	7.0
Mo	28.4	30.0	28.5	30.0	24.0	29.5	27.2	N. Mex	17.6	22.0	13.6	16.4	18.0	18.0	20.0
N. Dak	26.8	28.0	27.5	33.5	21.5	23.5	18.0	Ariz	27.4	20.0	30.0	30.0	22.0	26.0	28.0
S. Dak	26.8	32.0	28.5	34.5	21.3	17.5	18.0	Utah	23.6	24.6	24.4	24.9	20.0	24.0	24.0
Nebr	26.8	28.0	25.0	33.0	22.0	26.0	15.5	Nev	24.2	29.1	21.1	23.3	22.4	25.0	24.0
Kans	20.3	22.2	19.3	21.7	21.7	16.6	10.3	Wash	36.6	40.0	41.0	37.0	30.0	35.0	35.0
Del	32.7	37.0	29.4	33.1	27.0	37.0	31.0	Oreg	31.5	30.0	33.0	35.0	30.5	29.0	33.0
Md	38.9	39.0	40.0	39.3	31.0	45.0	39.8	Calif	34.9	35.0	36.0	35.0	33.5	35.1	32.6
Va	25.0	25.0	28.0	29.0	21.0	22.0	27.5								
W. Va	32.9	34.0	34.0	34.0	26.0	36.5	33.0	U. S	27.8	29.6	28.3	29.3	22.9	28.8	26.6

Division of Crop and Livestock Estimates.

Table 47.—*Corn: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual, 1924–1926*

Country	Acreage					Yield per acre					Production				
	Average 1909–1913[1]	Average 1921–1925	1924	1925	1926 preliminary	Average 1909–1913[1]	Average 1921–1925	1924	1925	1926 preliminary	Average 1909–1913[1]	Average 1921–1925	1924	1925	1926 preliminary
Northern Hemisphere															
NORTH AMERICA	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Canada	309	293	295	239	210	56.0	44.3	40.7	44.2	37.2	17,297	12,974	11,998	10,564	7,815
United States	104,229	102,826	101,863	101,359	99,492	26.0	27.7	22.7	28.8	26.6	2,712,364	2,850,904	2,309,414	2,916,961	2,645,031
Mexico	[2] 6,093	7,461	8,072	6,965	6,764	21.9	11.3	13.2	10.5	11.0	133,362	84,051	106,345	73,326	74,558
Guatemala	------	406	426	384	------	------	11.4	10.4	11.4	------	[3] 6,245	4,615	4,414	4,360	------
Total North American countries reporting area and production all years shown	110,631	110,580	110,230	108,563	106,466	25.9	26.7	22.0	27.6	25.6	2,863,023	2,947,929	2,427,757	3,000,851	2,727,404
Estimated North American total	111,660	111,700	110,400	109,700	107,600	------	------	------	------	------	2,877,000	2,964,000	2,444,000	3,016,000	2,743,000
EUROPE															
France	1,160	830	846	854	812	19.4	17.8	21.3	23.4	15.9	22,467	14,755	18,028	20,003	12,880
Spain	1,134	1,167	1,162	1,170	------	23.4	22.2	22.2	24.1	------	26,548	25,933	25,804	28,210	16,928
Portugal	------	[4] 798	800	------	------	------	14.1	14.9	------	------	------	[4] 11,219	11,897	11,727	------
Italy	4,090	3,802	3,806	3,840	3,758	25.1	24.9	27.8	28.6	31.4	102,676	94,804	105,679	109,980	118,106
Switzerland	3	4	4	4	3	37.7	46.0	44.3	44.3	43.3	113	184	177	177	130
Austria	190	140	147	149	153	23.8	25.4	25.3	30.9	26.4	4,530	3,553	3,719	4,597	4,034
Czechoslovakia	376	390	389	387	392	22.3	26.8	26.3	31.1	27.6	8,398	10,444	10,240	12,043	10,812
Hungary	2,192	2,437	2,459	2,655	2,629	27.7	23.9	30.1	33.1	30.0	60,813	58,354	74,122	87,971	78,826
Yugoslavia	4,786	4,780	4,857	5,222	------	23.4	22.9	30.8	28.6	------	111,897	109,399	149,399	149,230	147,651
Greece	[2] 454	[3] 449	470	------	------	[2] 21.7	[3] 15.4	15.1	------	------	[2] 9,8[illegible]	[3] 6,912	7,106	7,893	------

[1] Where changes in boundary have occurred, the averages reported are estimates for the crop within present boundaries.
[2] One year only.
[3] Two-year average.
[4] Four-year average.

Table 47.—*Corn: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*—Con.

Country	Acreage					Yield per acre					Production				
	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926 preliminary	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926 preliminary	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926 preliminary
Northern Hemisphere—Con.															
EUROPE—continued	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Bulgaria	1,492	1,427	1,505	1,531	1,470	17.6	15.6	16.4	18.4	19.7	26,277	22,328	24,756	28,158	29,018
Rumania	[3] 9,644	8,799	8,949	9,713	10,070	[3] 20.0	15.9	18.3	16.9	22.3	[3] 193,209	140,204	163,737	163,737	224,458
Poland	164	177	190	192		17.2	18.6	21.9	18.1		2,822	3,300	4,161	3,468	
Russia, European and Asiatic	3,246	[3] 6,362	5,049	7,674		16.1	21.3	18.7	25.8		52,185	[3] 135,380	94,300	197,782	145,870
Total European countries reporting area and production all years shown	19,147	17,829	18,105	19,133	19,287	21.9	19.8	22.1	22.3	24.8	418,483	344,636	400,458	426,666	478,284
Estimated European total excluding Russia	26,400	25,200	25,600	27,000	26,700						[4] 581,000	501,000	591,000	627,000	673,000
AFRICA															
Morocco	(438)	437	493	515	482		8.3	8.0	7.3	7.3	(3,500)	3,607	3,929	3,740	3,500
Algeria	34	22	24	21	26	17.6	12.2	10.0	13.8	8.5	598	269	241	290	222
Tunis	[6] 43	42	41	56	54	[6] 5.3	5.0	5.0	4.0	3.5	[6] 228	210	205	224	189
Egypt	[6] 1,705	1,988	1,878	2,076		[6] 37.7	34.8	36.0	37.2		[6] 64,273	69,096	67,572	77,180	
ASIA															
Turkey	[2] 872	[2] 1,001	661	1,001	377		[2] 20.6		20.6			[2] 20,606		20,606	
India	[3] 5,898	5,901	5,824	5,312		14.0	14.0	15.0	12.7		[3] 82,620	82,482	87,120	67,560	
Japanese Empire:															
Japan	133	[4] 142	140			25.5	25.4	25.5			3,391	3,606	3,565		
Chosen	156	231	229	241		14.3	12.2	10.4	11.8		2,236	2,829	2,375	2,852	
Kwantung	99	[4] 152	203			17.5	[4] 17.8	14.4			1,737	[4] 2,700	2,923		
Philippines	[5] 812	1,338	1,318	1,290		9.2	12.5	13.7	13.5		[4] 7,461	16,728	18,033	17,362	
Total Northern Hemisphere countries reporting area and production all years shown	130,293	128,910	128,893	128,288	126,315	25.2	25.6	22.0	26.8	25.4	3,285,832	3,296,651	2,832,590	3,431,771	3,209,579
Estimated Northern Hemisphere total excluding Russia	150,000	150,600	149,500	150,300	147,700						3,683,000	3,728,600	3,301,000	3,905,000	3,691,000

SOUTHERN HEMISPHERE															
Paraguay	80	102	107	114		20.9	18.0	13.2	20.0		626	1,832	1,417	2,280	
Brazil		[4] 6,980	6,178	6,301			25.1	28.2				[4] 175,387	161,734		
Chile	56	62	42	50		26.0	24.8	25.7	35.3		1,455	1,537	1,078	1,763	
Uruguay	589	497	460	406		10.4	11.7	10.0	13.2		6,120	5,830	4,600	5,349	
Argentina	8,710	8,688	9,162	10,618		22.0	25.2	20.3	26.3		191,698	218,969	186,391	279,516	
Union of South Africa	[3] 2,290	[3] 4,604				14.6	[3] 11.5				[4] 33,517	[3] 52,736	86,293	32,325	
Southern Rhodesia	161	224	233	250		11.4	18.6	15.9	22.1		1,834	4,170	3,715	5,536	
Java and Madura	(3,000)	3,982	4,856	3,949	6,825	14.0	14.3	15.3	15.6	11.7	(42,000)	57,032	66,760	61,580	79,741
Australia	353	[4] 333	399			28.5	[4] 26.9	31.2			10,057	[4] 8,944	12,432		
New Zealand	[4] 5	9	9	9		[4] 53.0	50.0	47.4	47.1		[4] 265	450	427	424	
Nyasaland	1	5	3	4		25.0	14.8	24.3	18.0		25	74	73	72	
Southern Hemisphere countries reporting area and production all years shown through 1925	12,552	13,569	14,372	15,400		19.4	21.4	18.4	23.2		244,023	289,894	264,371	356,520	
Estimated Southern Hemisphere total	21,900	26,400	26,500	27,500							444,000	546,000	544,000	591,000	
Northern and Southern Hemisphere total all countries reporting area and production all years shown through 1925	142,845	142,479	143,265	143,688		24.7	25.2	21.6	26.4		3,529,855	3,586,545	3,096,961	3,788,291	
Estimated world total excluding Russia	171,900	177,000	176,000	177,800							[5] 4,126,000	4,274,000	3,845,000	4,496,000	

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture. Figures refer to the crop harvested in the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere.

[1] Where changes in boundary have occurred, the averages reported are estimates for the crop within present boundaries.
[2] One year only.
[3] Two-year average.
[4] Four-year average.
[5] The estimate for the five-year period, 1909–1913, given in this table is somewhat larger than the figure obtained by averaging those five-year periods in Table 48. This is because in the detailed table estimates for warring countries are for post-war boundaries, whereas in Table 48 they are for pre-war territory. As a result in excluding Russia, which lost territory in the war, a smaller area is excluded in the detailed table than in Table 48.
[6] Includes some sorghum.
[7] Rough preliminary estimate assuming that countries not yet reporting produce an average crop.

TABLE 48.—*Corn: World production, 1909–1926*

Year	Production in countries reporting all years	World production excluding Russia, preliminary estimate	Total Europe, excluding Russia, preliminary estimate	Selected countries: United States	Italy	Rumania	Argentina	Brazil	Yugoslavia	Russia [1]
	1,000,000 bus.	*1,000,000 bus.*	*1,000,000 bus.*	*1,000 bus.*	*1,000 bus.*	*1,000 bus.*	*1,000 bus.*	*1,000 bus.*	*1,000 bus.*	*1,000 bus.*
1909	3,036	3,857	499	2,572,336	99,289	70,138	175,187		34,351	55,207
1910	3,209	4,059	564	2,886,260	101,722	103,665	27,676		29,101	102,000
1911	3,099	3,908	501	2,531,488	93,518	110,712	295,849		26,531	95,193
1912	3,614	4,451	547	3,124,746	98,668	103,921	196,642			94,118
1913	3,002	3,880	576	2,446,988	108,388	114,663	263,135			83,559
1914	3,303	4,186	562	2,672,804	104,967	102,552	325,178			[2] 90,131
1915	3,475	4,315	520	2,994,793	121,824	86,412	161,133			[3] 72,169
1916	2,869	3,710	389	2,566,927	81,547		58,839	203,715		[4] 62,207
1917	3,483	4,279	351	3,065,233	82,771		170,660			
1918	2,945	3,701	299	2,502,665	76,590	31,318	224,239			
1919	3,317	4,183	454	2,811,302	85,846	[5] 141,352	258,686			
1920	3,694	4,657	520	3,208,584	89,298	[5] 182,031	230,420	186,450	[5] 101,136	[4] 45,605
1921	3,495	4,301	393	3,068,569	92,325	[5] 110,638	176,171	180,577	[5] 73,788	[4] 45,576
1922	3,349	4,240	424	2,906,020	76,830	[5] 119,829	176,103	202,212	[5] 89,796	[4] 81,221
1923	3,592	4,490	473	3,053,557	89,204	[5] 151,403	276,756	157,026	[5] 84,781	[4] 66,960
1924	2,820	3,845	591	2,309,414	105,679	[5] 155,461	186,301	161,734	[5] 149,399	[5] 94,300
1925	3,488	4,496	627	2,916,961	109,980	[5] 163,737	279,516		[5] 149,230	[5] 197,782
1926 [6]			652	2,645,031	118,106	[5] 203,363			[5] 147,651	[5] 145,870

Division of Statistical and Historical Research. For each year is shown the production during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere. Estimates of world corn production for the period 1900–1908 appear in Agriculture Yearbook, 1924, p. 606.

[1] Includes all Russian territory reporting for the years shown.
[2] Exclusive of the 10 Vistula Provinces of Russian Poland and the Province of Batum in Transcaucasia.
[3] Exclusive of Russian Poland, Lithuania, parts of Latvia and the Ukraine, and the two Provinces of Batum and Elizabethpol in Transcaucasia.
[4] Estimate for the present territory of the Union of Socialist Soviet Republics, exclusive of Turkestan, Transcaucasia, and the Far East, which territory in 1924 produced 26,048,000 bushels.
[5] Production in present boundaries, therefore not comparable with earlier years.
[6] Preliminary.

TABLE 49.—*Corn: Monthly marketings by farmers, as reported by about 3,500 mills and elevators, United States, 1917–1925*

Year beginning July	Percentage of year's receipts: July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Season
1917	5.3	4.0	3.4	3.8	8.8	12.2	14.2	16.1	13.7	7.1	5.6	5.8	100.0
1918	6.7	6.9	8.4	6.7	7.3	12.0	15.0	7.2	7.5	8.2	8.0	6.1	100.0
1919	4.5	5.6	4.9	5.6	9.2	15.0	12.9	9.5	8.7	5.9	7.6	10.6	100.0
1920	5.4	5.6	6.9	5.3	7.1	11.3	14.3	11.7	8.9	5.6	8.5	9.4	100.0
1921	4.9	7.3	8.6	6.7	6.6	12.4	13.8	12.4	7.5	4.7	7.6	7.5	100.0
1922	6.8	7.5	9.1	8.2	8.7	13.6	10.7	11.0	6.6	5.3	6.1	6.4	100.0
1923	6.8	7.2	6.1	5.6	10.4	12.3	12.9	13.3	7.4	6.1	5.9	6.0	100.0
1924	6.6	6.2	6.5	7.0	11.1	13.0	13.6	9.5	8.1	6.3	7.8	4.3	100.0
1925	5.1	7.6	5.9	5.9	9.3	14.6	12.1	10.4	8.5	5.3	7.1	8.2	100.0

Division of Crop and Livestock Estimates.

TABLE 50.—*Corn: Farm stocks, supplies, and shipments, United States, 1909–1926*

Year beginning Nov.	Old stocks on farms Nov. 1[1]	Crop				Total supplies	Stocks on farms Mar. 1 following[1]	Shipped out of county where grown[1]
		Quantity	Quality[2]	Proportion merchantable[1]				
	1,000 bush.	*1,000 bush.*	*Per cent*	*Per cent*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*
1909	77,403	2,572,336	84.2	82.7	2,126,965	2,649,739	980,848	620,057
1910	113,919	2,886,260	87.2	86.4	2,492,763	3,000,179	1,165,378	661,777
1911	123,824	2,531,488	80.6	80.1	2,027,922	2,655,312	884,059	517,766
1912	64,764	3,124,746	85.5	85.0	2,654,907	3,189,510	1,290,642	680,831
1913	137,972	2,446,988	82.2	80.1	1,961,058	2,584,960	866,352	422,059
1914	80,046	2,672,804	85.1	84.5	2,259,755	2,752,850	910,894	498,285
1915	96,009	2,994,793	77.2	71.1	2,127,965	3,090,802	1,116,559	560,824
1916	87,908	2,566,927	83.8	83.9	2,154,487	2,654,835	782,303	450,589
1917	34,448	3,065,233	75.2	60.0	1,837,728	3,099,681	1,253,200	678,027
1918	114,678	2,502,665	85.6	82.4	2,062,041	2,617,343	855,269	362,589
1919	69,835	2,811,302	89.1	87.1	2,448,204	2,881,137	1,045,575	470,328
1920	139,083	3,208,584	89.6	86.9	2,789,720	3,347,667	1,564,832	705,481
1921	285,769	3,068,569	84.0	87.5	2,684,634	3,354,338	1,305,559	587,893
1922	177,287	2,906,020	85.0	88.3	2,567,044	3,083,307	1,093,306	518,779
1923	83,856	3,053,557	79.4	80.8	2,467,763	3,137,413	1,153,847	600,745
1924	102,429	2,309,414	63.2	66.0	1,523,740	2,411,843	757,890	417,780
1925	58,248	2,916,961	83.6	78.8	2,298,927	2,975,209	1,329,581	578,551
1926[3]	183,015	2,645,031	72.6			2,828,046		

Division of Crop and Livestock Estimates.

[1] Based on reported percentage of entire crop on farms, proportion merchantable, and per cent shipped out of county where grown.
[2] 1909–10 to 1920–21, quality reported as per cent of a high medium grade; 1921–1926, per cent of merchantable quality.
[3] Preliminary.

TABLE 51.—*Corn: Receipts at primary markets, averages by groups, 1909–1925, and annual, 1921–1925*

[Thousand bushels—i. e., 000 omitted]

Year beginning November	Chicago	St. Louis	Kansas City	Peoria	Omaha	Indianapolis	Total 11 markets[1]
Average:							
1909–1913	105,459	22,316	19,052	16,710			
1914–1920	101,633	22,286	18,263	25,349	26,731	19,469	246,387
1921–1925	115,372	30,749	18,436	22,221	22,668	18,559	266,015
1921	186,815	33,809	16,063	24,116	29,583	21,665	374,160
1922	115,960	29,856	15,449	21,157	22,730	18,317	252,124
1923	101,108	39,215	21,136	17,730	27,495	17,536	275,082
1924	80,696	23,116	21,448	20,961	13,138	17,199	202,225
1925	92,283	27,751	18,034	27,139	20,396	18,078	226,484
Monthly average, 1921–1925.							
November	7,711	1,976	1,105	1,720	1,249	2,137	17,993
December	15,712	3,414	2,727	2,609	2,574	2,327	34,474
January	14,578	3,604	2,514	2,454	3,311	2,246	33,934
February	16,193	3,257	2,460	2,422	2,618	2,019	35,172
March	10,227	2,500	1,955	1,841	2,265	1,488	25,273
April	4,506	2,111	1,277	1,183	1,492	959	13,152
May	4,587	2,174	1,338	1,360	1,485	980	13,716
June	8,118	3,062	1,599	1,692	1,691	1,371	20,672
July	5,944	2,464	1,055	1,300	1,269	1,224	15,373
August	7,796	2,134	1,032	1,612	1,828	1,188	17,544
September	9,491	2,021	644	1,793	1,398	1,194	18,753
October	10,328	2,032	731	2,235	1,486	1,445	19,960

Division of Statistical and Historical Research. Compiled from the Chicago Daily Trade Bulletin and the annual reports of the Chicago Board of Trade. Data 1909–1920 available in 1925 Yearbook, p. 795, Table 69.

[1] Includes also Milwaukee, Minneapolis, Duluth, Toledo, and Detroit.

TABLE 52.—*Corn: Visible supply in United States, 1st of month, 1909–1926*

Year beginning Nov.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
	1,000 bu.	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*
Average:												
1909–1913	3,352	2,088	7,342	10,406	15,165	16,233	8,358	4,656	7,980	4,583	3,566	5,444
1914–1920	3,763	2,953	6,909	12,521	17,069	18,949	13,837	9,059	8,509	6,140	4,048	5,245
1921–1925	7,679	7,861	17,054	23,496	31,478	34,183	26,334	17,732	16,882	11,558	8,053	8,853
1909	2,653	3,289	8,465	9,764	13,480	13,778	10,603	5,940	5,146	3,770	2,750	5,011
1910	3,510	1,545	5,099	9,145	11,794	11,166	7,047	4,685	7,482	7,100	6,724	6,339
1911	1,708	2,054	5,140	6,900	14,257	15,914	7,490	5,699	8,204	2,451	1,828	3,101
1912	2,689	1,525	5,879	9,717	17,918	21,494	7,270	2,549	11,479	6,380	2,612	7,308
1913	6,206	2,026	12,126	16,505	18,374	18,812	9,380	4,409	7,589	3,203	3,923	5,461
1914	3,114	3,382	19,703	34,156	41,238	32,877	20,203	12,795	5,225	2,306	2,382	3,444
1915	3,288	4,387	8,919	14,773	24,605	27,697	21,004	14,505	6,870	5,167	3,330	5,098
1916	2,361	2,677	5,838	10,671	12,931	11,974	7,173	2,629	3,277	2,841	2,371	1,163
1917	1,277	1,932	3,155	4,623	8,939	19,016	16,111	13,038	11,487	9,406	5,282	5,503
1918	4,733	2,216	2,415	5,549	4,483	2,514	4,245	2,600	4,038	2,461	956	2,103
1919	1,484	1,477	2,921	3,575	4,951	5,669	5,035	2,740	4,364	6,152	2,564	7,587
1920	10,085	4,597	5,409	14,297	22,333	32,896	23,018	15,103	24,304	14,584	11,500	11,765
1921	18,891	15,518	23,279	30,778	44,792	46,889	35,564	27,046	29,337	19,509	7,314	12,206
1922	8,806	11,072	16,760	21,658	27,529	28,742	22,339	6,734	8,366	2,373	1,587	2,052
1923	809	2,690	8,799	9,379	18,898	26,074	17,978	12,288	8,279	4,887	5,070	7,154
1924	8,097	7,563	18,573	27,571	32,292	32,727	23,379	17,140	13,094	6,093	6,524	5,470
1925	1,790	2,461	17,861	28,092	33,878	36,485	32,408	25,453	30,333	24,930	19,771	17,381
1926	22,258	28,699										

Division of Statistical and Historical Research.

Compiled from the Chicago Daily Trade Bulletin. Reported on Saturday nearest the first of each month.

TABLE 53.—*Shelled corn: Classification of cars graded by licensed inspectors, all inspection points*

	Receipts								Shipments							
	1	2	3	4	5	6	Sample	Total	1	2	3	4	5	6	Sample	Total
	Total of all classes and subclasses under each grade, by cars, annual, 1917–1925															
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Year beginning Nov. 1—																
1917	2,281	18,714	58,562	56,240	45,610	44,621	98,844	324,872	510	11,589	54,975	31,687	13,037	16,141	32,218	160,187
1918	12,661	34,727	40,872	41,491	28,832	16,061	19,638	194,282	2,339	29,368	39,532	15,985	5,670	5,616	7,425	105,935
1919	28,517	47,961	38,774	56,647	27,313	9,188	13,058	221,458	5,966	39,323	30,781	15,381	4,908	2,351	3,419	102,129
1920	68,550	88,875	64,237	63,081	21,176	9,420	8,738	324,077	34,785	141,483	49,905	10,774	1,774	2,449	3,172	244,342
1921	30,970	197,254	115,207	42,880	21,963	15,979	4,951	429,204	9,854	229,539	48,887	7,270	5,321	4,992	1,436	307,299
1922	21,580	141,563	98,932	24,261	4,270	3,526	3,711	297,843	3,338	131,026	38,408	2,767	666	933	639	177,777
1923	3,038	59,578	111,899	69,352	35,901	15,404	10,741	305,913	978	59,649	79,354	15,055	3,138	2,185	2,131	162,490
1924	7,883	80,883	56,542	34,431	31,370	17,252	12,345	240,706	2,568	64,534	43,718	9,065	4,294	3,303	2,952	130,434
1925	3,355	59,985	62,757	51,092	48,348	40,116	31,473	297,129	813	60,710	55,960	12,596	5,559	6,014	4,362	146,014
	Total inspections by grade and class, Nov. 1, 1925, to Oct. 31, 1926															
Class:																
White	1,025	16,409	13,717	9,189	6,800	4,029	3,317	54,486	499	17,990	7,928	2,011	645	271	217	29,561
Yellow	2,105	35,969	36,683	31,962	33,178	28,429	20,937	189,263	271	32,069	39,193	6,390	2,734	3,620	2,212	86,489
Mixed	228	7,607	12,357	9,941	8,370	7,658	7,219	53,380	43	10,651	8,839	4,195	2,180	2,123	1,933	29,964
	Total of all classes and subclasses under each grade, by percentage, annual, 1917–1925															
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
Year beginning Nov. 1—																
1917	0.7	5.8	18.0	17.3	14.1	13.7	30.4	100	0.3	7.2	34.3	19.8	8.2	10.1	20.1	100
1918	6.5	17.9	21.0	21.4	14.8	8.3	10.1	100	2.2	27.7	37.3	15.1	5.4	5.3	7.0	100
1919	12.9	21.7	17.5	25.6	12.3	4.1	5.9	100	5.8	38.5	30.1	15.1	4.8	2.3	3.4	100
1920	21.2	27.4	19.8	19.5	6.5	2.9	2.7	100	14.3	57.9	20.4	4.4	.7	1.0	1.3	100
1921	7.2	46.0	26.8	10.0	5.1	3.7	1.2	100	3.2	74.7	16.0	2.3	1.7	1.6	.5	100
1922	7.2	47.5	33.2	8.2	1.4	1.2	1.3	100	1.9	73.7	21.6	1.5	.4	.5	.4	100
1923	1.0	19.5	36.6	22.7	11.7	5.0	3.5	100	.6	36.7	48.8	9.3	1.9	1.4	1.3	100
1924	3.3	33.6	23.5	14.3	13.0	7.2	5.1	100	2.0	49.5	33.5	6.9	3.3	2.5	2.3	100
1925	1.1	20.2	21.1	17.2	16.3	13.5	10.6	100	.6	41.6	38.3	8.6	3.8	4.1	3.0	100
	Total inspections by grade and class, Nov. 1, 1925, to Oct. 31, 1926															
Class:																
White	1.9	30.1	25.2	16.8	12.5	7.4	6.1	100	1.7	60.9	26.8	6.8	2.2	0.9	0.7	100
Yellow	1.1	19.0	19.4	16.9	17.5	15.0	11.1	100	.3	37.1	45.3	7.4	3.2	4.2	2.5	100
Mixed	.4	14.3	23.2	18.6	15.7	14.3	13.5	100	.1	35.5	29.5	14.0	7.3	7.1	6.5	100

Grain Division.

TABLE 54.—*Corn, including meal: International trade, average 1910–1914, annual 1924–1926*

[Thousand bushels—i. e., 000 omitted]

Country	Year ended June 30							
	Average 1910–1914		1924		1925		1926 preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	[1] 2	[1] 115,749	[2] 7	128,313	[2] 2	158,626	[2] 2	142,956
Australia	[1] 440	[1] 10	2,582	8	7	2,554		[3] 55
British India		[1,4] 580		1,912		715		38
Bulgaria	[1] 44	[5] 9,234		[2] 4,183		5,624		3,799
China [2]	[6] 38	[6] 148	17	852	89	545		758
Dutch East Indies		[1] 1,215				[5] 3,677		
French Indo-China [3]				1,313		1,578		2,223
Hungary			108	142	116	[5] 3,296	46	8,752
Rumania	[1,7] 364	[1,7] 46,998	3	39,340	12	24,631		21,239
Russia	[5] 299	[5] 28,354		5,288		6,836		7,867
Syria and Lebanon			[2] 2	[2] 36		[3] 6		[3,8] 26
Union of South Africa	[1] 143	[1] 3,952	[9] 8	[9] 21,100	[2] 23	6,992	[2] 20	40,380
United States	[7] 4,411	41,409	228	23,135	4,617	9,791	635	24,783
Yugoslavia [3]				[10] 2,793		37,713		41,122
PRINCIPAL IMPORTING COUNTRIES								
Algeria	[1] 231	[1] 1	80	27	390	77	65	10
Austria			2,969		5,500		6,387	19
Austria-Hungary	[5] 15,455	[5] 263						
Belgium	25,818	8,238	16,460	503	19,199	537	22,592	655
Canada	10,678	27	9,249	63	7,735	33	9,325	62
Czechoslovakia			4,010		11,893		13,824	12
Cuba	2,860	(11)	3,368					
Denmark	[5] 11,777	(11)	12,554		20,740		16,202	
Egypt	[5] 504	[5] 63	75	158	109	65	944	(11)
Estonia [3]					26		16	
Finland	[1] 260		200		101		44	
France	19,793	88	21,629	79	21,255	99	21,826	108
Germany	32,056	2	5,811	14	22,268	187	19,679	103
Greece			650		[3] 911		[3,12] 87	
Irish Free State					15,227	125	14,127	92
Italy	14,829	265	10,334	636	6,446	708	14,227	119
Japan [3]			457		198		558	
Latvia [3]			9		25		20	
Mexico	[5] 1,120	[5,13] 7	642	28	[14] 1,029	[14] 2	[14] 2,801	[14] 2
Netherlands	[5] 30,377	[5] 8,641	29,354	181	33,367	175	38,965	443
Norway	[5,13] 1,292		3,606		3,235		4,454	
Poland [2]			109	1	291	99	1,792	65
Portugal	[5] 1,833	[5] 11	[2] 1,955		[2] 1,942			
Spain	2,023	49	11,245	(11)	13,260	1	20,521	1
Sweden	[5] 1,656	[5] 26	3,069		4,040		3,797	
Switzerland	[5] 3,984	[5] 1	4,306	1	6,343	(11)	5,539	(11)
Tunis	[5] 442	[5] 8	[3] 1		[3] 980		[3] 165	
United Kingdom	80,441	[1] 115	63,466	3,107	71,131	3,049	71,013	2,593
Uruguay [2]	5	201		232	103	33	97	43
Total 43 countries	263,205	265,655	208,563	233,445	272,610	267,774	289,770	298,325

Division of Statistical and Historical Research. Official sources except where otherwise noted. Maicena or maizena is included with "Corn and corn meal."

[1] Average of years ended Dec. 31, International Yearbook of Agricultural Statistics.
[2] Year ended Dec. 31.
[3] International Crop Report and Agricultural Statistics.
[4] Two-year average.
[5] Average of years ended July 31, from International Institute of Agriculture sources.
[6] Four-year average.
[7] Three-year average.
[8] Eleven months.
[9] Ten months.
[10] Eight months.
[11] Less than 500 bushels.
[12] Two months.
[13] One year only.
[14] Six months.

TABLE 55.—*Corn: Estimated price per bushel, received by producers, December 1, average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Me	107	77	100	112	136	112	100	N. C	101	78	89	102	124	110	88
N. H	99	75	75	111	134	100	100	S. C	100	74	87	105	123	110	90
Vt	99	76	91	110	118	100	95	Ga	92	53	86	107	112	100	76
Mass	105	77	94	115	129	110	115	Fla	90	53	87	100	112	100	92
R. I	121	110	120	115	140	120	115	Ky	78	55	69	85	102	81	65
Conn	105	90	96	107	120	110	115	Tenn	84	52	79	94	108	89	66
N. Y	93	67	83	100	117	97	86	Ala	96	62	90	108	122	100	76
N. J	81	53	70	95	116	73	80	Miss	94	56	85	107	126	94	82
Pa	83	55	72	91	118	80	78	Ark	89	57	85	101	107	97	80
Ohio	68	41	66	74	104	57	60	La	92	65	83	105	115	94	90
Ind	61	37	53	62	94	55	50	Okla	74	32	[illegible]	87	89	90	56
Ill	63	38	60	65	95	58	56	Tex	91	54	83	100	110	110	60
Mich	75	48	67	78	106	75	73	Mont	76	67	53	65	99	95	92
Wis	73	46	63	80	105	72	75	Idaho	79	50	79	77	113	75	90
Minn	58	31	56	61	85	56	56	Wyo	69	50	60	70	94	70	72
Iowa	59	30	56	62	93	56	56	Colo	64	31	66	65	88	70	71
Mo	69	40	68	74	96	69	68	N. Mex	95	90	82	95	110	100	87
N. Dak	54	34	53	54	76	55	68	Ariz	118	100	115	120	125	130	120
S. Dak	53	26	50	52	80	60	58	Utah	100	76	85	95	145	100	115
Nebr	58	27	58	53	91	61	68	Nev	118	120	105	125	121	120	120
Kans	62	31	61	64	87	66	70	Wash	99	86	105	95	112	95	95
Del	75	45	70	81	112	65	64	Oreg	99	84	91	90	121	107	100
Md	76	49	68	82	111	70	64	Calif	108	77	100	108	138	118	106
Va	94	69	79	94	126	101	85								
W. Va	96	75	84	99	124	100	94	U. S	69.3	42.3	65.8	72.6	98.2	67.4	64.4

Division of Crop and Livestock Estimates.

TABLE 56.—*Corn: Estimated price per bushel, received by producers, United States, 1909–1926*

Year beginning November	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Weighted av.
Average:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1909–1913	59.4	57.7	58.9	60.1	61.3	63.4	66.2	68.4	70.0	72.1	71.7	66.7	62.8
1914–1920	100.1	98.7	101.9	105.0	109.5	116.5	123.7	127.1	130.5	130.8	122.4	107.7	110.7
1921–1925	71.7	71.8	74.0	76.5	77.4	77.1	79.6	81.6	84.9	88.8	86.6	82.7	78.1
1909	60.0	60.1	63.8	65.6	65.7	64.5	64.4	65.7	66.7	66.8	63.7	56.8	63.2
1910	50.3	48.1	48.6	49.0	49.3	50.8	53.4	57.6	62.9	65.8	65.8	65.2	53.5
1911	63.2	62.0	63.4	65.6	68.8	75.2	81.0	81.8	80.2	78.4	73.9	64.3	68.8
1912	53.6	48.8	49.8	51.4	53.0	55.2	58.7	61.9	64.3	70.4	75.4	73.0	56.7
1913	69.9	69.4	69.0	68.7	69.9	71.4	73.6	75.2	76.2	79.2	79.5	74.4	71.8
1914	67.5	65.3	69.5	74.0	75.1	76.4	77.8	77.8	78.3	78.1	73.9	66.2	71.4
1915	59.7	59.8	64.4	67.4	69.2	71.3	73.2	74.8	77.4	81.5	83.0	83.6	69.6
1916	87.0	89.4	92.9	98.4	107.2	132.0	155.4	162.4	180.6	186.0	175.3	160.6	119.0
1917	137.0	131.4	136.8	146.6	154.0	154.6	154.1	153.1	156.7	162.7	162.6	149.9	148.1
1918	138.4	140.6	141.4	137.6	143.4	156.1	166.9	173.8	183.8	188.3	169.6	143.6	153.1
1919	134.0	137.4	143.6	147.6	153.6	164.1	177.4	185.4	174.6	159.7	138.5	104.3	151.5
1920	77.2	66.8	64.6	63.4	63.8	61.2	61.0	62.4	62.0	59.0	53.6	46.0	62.1
1921	41.7	42.8	44.6	50.3	55.8	58.3	60.6	61.9	63.3	63.6	62.2	62.2	54.3
1922	64.3	67.6	70.2	72.5	75.3	79.6	84.0	85.8	87.0	87.0	86.2	84.8	76.7
1923	78.3	72.2	73.6	76.5	77.2	78.2	78.6	80.8	98.3	107.4	109.7	108.9	84.0
1924	99.6	105.6	112.0	114.5	112.1	103.8	107.5	111.0	104.4	106.5	98.8	83.0	105.8
1925	74.6	70.7	69.6	68.5	66.6	65.7	67.1	68.6	71.5	79.5	76.2	74.5	69.9
1926	66.0	64.5	------	------	------	------	------	------	------	------	------	------	------

Division of Crop and Livestock Estimates. Mean of prices reported on 1st of month and 1st of succeeding month, November, 1909–December, 1923.

TABLE 57.—*Corn, No. 3, yellow: Weighted average price per bushel of reported cash sales, Chicago, 1909–1926*

Year beginning November	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Weighted av.[1]
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1909–1913	0.60	0.55	0.56	0.56	0.57	0.61	0.64	0.64	0.65	0.73	0.71	0.66	0.61
1914–1920	1.15	1.10	1.11	1.09	1.14	1.21	1.30	1.30	1.34	1.36	1.24	1.12	1.15
1921–1925	.79	.77	.79	.80	.79	.78	.81	.82	.89	.90	.87	.88	.79
1909	.59	.59	.64	.63	.61	.57	.60	.59	.62	.64	.58	.50	.59
1910	.49	.45	.45	.45	.45	.50	.54	.55	.63	.65	.67	.73	.53
1911	.68	.61	.62	.64	.68	.78	.79	.75	.68	.79	.74	.65	.71
1912	.52	.46	.46	.48	.49	.55	.57	.60	.62	.74	.75	.70	.53
1913	.72	.66	.62	.62	.64	.67	.70	.72	.71	.82	.79	.73	.70
1914	.67	.64	.71	.74	.72	.75	.77	.74	.78	.81	.74	.65	.70
1915	.63	.69	.74	.74	.73	.76	.75	.74	.81	.85	.86	.96	.79
1916	.98	.92	.98	1.00	1.09	1.40	1.59	1.70	1.99	2.06	2.10	2.03	1.11
1917	2.21	1.77	1.77	1.81	1.70	1.65	1.60	1.62	1.70	1.72	1.58	1.41	1.63
1918	1.33	1.45	1.43	1.27	1.53	1.62	1.74	1.78	1.92	1.95	1.55	1.41	1.62
1919	1.46	1.47	1.51	1.46	1.58	1.69	2.02	1.89	1.58	1.58	1.31	.91	1.59
1920	.77	.74	.65	.63	.62	.57	.60	.63	.60	.56	.53	.45	.62
1921	.47	.47	.48	.55	.57	.58	.62	.61	.64	.62	.64	.69	.55
1922	.71	.73	.70	.72	.73	.79	.82	.84	.88	.88	.89	1.04	.73
1923	.82	.71	.76	.78	.77	.77	.77	.82	1.09	1.17	1.14	1.10	.88
1924	1.11	1.20	1.24	1.22	1.17	1.05	1.15	1.13	1.08	1.02	.91	.82	1.06
1925	.83	.76	.79	.75	.72	.71	.71	.70	.78	.80	.79	.77	.75
1926	.71	.75	------	------	------	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from Chicago Daily Trade Bulletin. Data for 1899–1908 available in 1924 Yearbook, p. 612, Table 73.

[1] Average of daily prices weighted by car-lot sales.

TABLE 58.—*Corn: Weighted average price per bushel of reported cash sales of all classes and grades at Chicago and six markets combined, 1918–1926*

CHICAGO

Year beginning November	Nov	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Weighted average[1]
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Av. 1921–1925	74.7	74.5	74.9	75.1	74.7	75.7	80.1	80.8	88.0	89.1	86.4	87.1	79.0
1918	118.6	138.6	131.4	122.0	144.2	160.1	174.0	173.7	191.8	193.2	156.6	140.0	160.4
1919	143.8	141.6	144.9	139.5	155.1	159.7	197.4	183.3	155.3	154.9	132.2	95.9	144.1
1920	78.8	72.5	62.1	59.9	60.7	54.5	61.2	59.1	59.4	56.2	53.2	46.2	56.6
1921	46.7	47.1	47.3	54.0	57.1	58.2	61.4	60.0	63.7	62.0	63.0	69.0	56.9
1922	71.1	72.4	70.1	72.5	72.8	79.3	81.8	84.0	87.1	88.2	88.8	102.4	78.1
1923	76.1	69.8	74.4	75.2	74.4	76.4	76.7	82.6	109.1	117.2	114.9	110.0	86.0
1924	109.3	115.3	113.1	110.8	103.8	99.1	113.4	111.6	106.1	101.8	89.4	80.9	105.7
1925	70.3	67.8	69.5	63.1	65.2	65.3	67.4	65.7	74.0	76.1	75.9	73.1	68.4
1926	66.5	65.3	------	------	------	------	------	------	------	------	------	------	------

SIX MARKETS COMBINED[2]

Year beginning November	Nov	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Weighted average[1]
Av. 1921–1925	74.1	73.5	74.1	74.1	73.7	75.1	79.4	80.3	87.2	88.1	86.0	86.6	78.2
1918	122.5	140.4	133.0	123.0	143.1	160.6	172.2	173.9	189.9	191.5	156.1	139.9	150.3
1919	143.2	140.4	143.2	137.9	153.1	163.8	191.7	181.0	154.8	153.2	130.1	94.3	146.5
1920	76.5	68.6	60.3	58.1	58.8	52.9	58.9	48.3	57.5	54.0	51.9	45.2	55.5
1921	45.6	45.7	46.0	53.3	55.4	56.5	59.6	59.3	62.1	60.1	62.3	69.4	55.7
1922	70.8	71.6	69.2	71.6	72.4	79.0	82.1	83.1	85.6	86.4	88.3	100.3	77.4
1923	74.9	67.5	72.8	73.7	72.7	74.7	75.4	82.7	106.6	114.4	113.7	109.2	83.0
1924	108.3	114.4	112.9	108.6	103.5	99.0	111.9	109.7	105.3	101.3	89.1	80.8	106.0
1925	71.0	68.3	69.5	63.2	64.6	66.4	68.0	66.9	76.3	78.3	76.5	73.2	69.0
1926	67.3	65.9	------	------	------	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from Chicago Daily Trade Bulletin, St. Louis Daily Market Reporter, Omaha Daily Price Current, Kansas City Grain Market Review, Minneapolis Daily Market Record, Cincinnati Daily Trade Bulletin. These prices are comparable with farm prices.

[1] Average of daily prices weighted by car-lot sales.
[2] Markets are Chicago, St. Louis, Omaha, Kansas City, Minneapolis, and Cincinnati (not included from November, 1918, through December, 1919).

Table 59.—*Corn: Spot price per bushel of 56 pounds at Buenos Aires, 1912–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:													
1914–1920	$0.68	$0.69	$0.67	$0.69	$0.72	$0.74	$0.79	$0.78	$0.71	$0.69	$0.74	$0.72	$0.72
1921–1925	.84	.87	.85	.79	.76	.72	.75	.79	.80	.79	.80	.82	.80
1912	(1)	(1)	(1)	.58	.53	.52	.51	.52	.50	.51	.52	.53	.52
1913	.54	.54	.54	.56	.55	.55	.55	.55	.62	.59	.58	.58	.56
1914	.55	.56	.56	.54	.59	.55	.57	[2] .56	.55	.49	.53	.54	.55
1915	.54	.61	.56	.57	.54	.50	.51	.49	.51	.51	.54	.52	.53
1916	.56	.60	.56	.51	.45	.43	.45	.51	.55	.70	1.03	.93	.61
1917	1.07	1.07	.99	1.03	1.27	1.46	1.43	1.27	.87	.85	.95	.88	1.10
1918	.79	.79	.74	.59	.53	.57	.64	.68	.65	.63	.63	.63	.66
1919	.57	.52	.47	.55	.55	.55	.96	1.07	.91	.79	.74	.71	.70
1920	.70	.71	.83	1.03	1.13	1.10	.96	.90	.92	.83	.77	.82	.89
1921	.88	.91	.91	.78	.61	.63	.65	.66	.65	.58	.61	.63	.71
1922	.63	.73	.79	.77	.75	.71	.78	.78	.76	.74	.70	.74	.74
1923	.80	.82	.81	.80	.77	.75	.73	.69	.74	.78	.81	.79	.77
1924	.78	.82	.77	.67	.65	.57	.68	.85	.93	1.05	1.06	1.07	.83
1925	1.12	1.08	.96	.91	1.00	.92	.93	.96	.91	.82	.84	.86	.94
1926	.78	.73	.66	.70	.68	.68	.68	.70	.65	.60	.56	.55	.66

Division of Statistical and Historical Research. Compiled from International Yearbook of Agricultural Statistics, 1912–1921. Subsequently Review of the River Plate. Average of weekly quotations.

[1] No quotations. [2] Interpolation, no quotation.

Table 60.—*Corn, yellow, La Plata: Spot price per bushel of 56 pounds at Liverpool, 1912–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:													
1914–1920	$1.53	$1.59	$1.58	$1.61	------	$1.55	$1.56	$1.61	$1.61	$1.60	$1.59	$1.63	$1.59
1921–1925	1.11	1.16	1.14	1.12	$1.16	1.10	1.08	1.08	1.05	1.01	1.00	1.04	1.08
1912	(1)	(1)	(1)	(1)	.97	.87	.71	.75	.78	.72	.68	.67	.77
1913	.71	.75	.76	.74	.72	.69	.67	.67	.70	.66	.63	.67	.70
1914	.65	.66	.68	.68	.74	.76	.78	.97	.93	.83	.78	.83	.77
1915	.98	1.06	1.02	1.06	1.11	.97	.92	.90	.85	.94	1.06	1.19	1.00
1916	1.40	1.44	1.42	1.43	1.47	1.33	1.45	1.54	1.39	1.48	1.69	1.81	1.49
1917	1.89	1.92	2.00	2.16	(1)	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.11
1918	2.23	2.23	2.23	2.23	2.23	2.23	2.42	2.61	2.61	2.61	2.61	2.61	2.40
1919	2.04	2.04	1.75	1.74	1.74	1.72	1.65	1.66	1.69	1.68	1.65	1.52	1.74
1920	[2]1.49	[3]1.77	[3]1.96	1.97	1.81	1.67	1.53	1.43	1.60	1.49	1.15	1.25	1.59
1921	1.28	1.22	1.30	1.28	1.18	1.09	1.05	.93	.83	.72	.78	.88	1.04
1922	.92	1.08	1.08	1.03	1.06	1.01	1.10	1.10	1.09	1.08	.96	1.00	1.04
1923	.99	1.04	1.05	1.09	1.14	1.10	1.02	.94	.98	.97	.96	1.02	1.02
1924	1.03	1.15	1.11	1.07	1.12	1.00	.94	1.04	1.14	1.24	1.21	1.22	1.11
1925	1.31	1.29	1.14	1.11	1.30	1.28	1.27	1.38	1.20	1.03	1.07	1.10	1.20
1926	.97	.91	.89	.94	.89	.87	1.00	.98	.90	.93	.95	.92	.93

Division of Statistical and Historical Research. Compiled from International Yearbook of Agricultural Statistics, 1912–1921. Subsequently Broomhall's Corn Trade News.

[1] Not quoted. [2] Afloat price. [3] Nominal.

OATS

TABLE 61.—*Oats: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage harvested	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Farm value Dec. 1	Value per acre[1]	Chicago, cash price per bushel, No. 2 white[2]				Domestic exports, including oatmeal, fiscal year beginning July 1	Imports, fiscal year beginning July 1[3]
							December		Following May			
							Low	High	Low	High		
	1,000 acres	*Bush. of 32 lbs.*	*1,000 bushels*	*Cents*	*1,000 dollars*	*Dollars*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Bushels*	*Bushels*
Average:												
1909–1913	37,357	30.6	1,143,407	37.6	429,797	11.51	37.2	39.4	38.2	44.6	9,655,308	5,352,342
1914–1920	41,674	33.4	1,393,300	55.3	769,842	18.47	56.9	63.4	60.9	70.5	83,085,412	2,148,512
1921–1925	42,850	30.8	1,318,021	39.9	525,747	12.27	43.1	51.2	42.6	47.4	22,381,906	1,899,201
1909	*35,159*	30.4	1,068,289	40.6	433,869	12.34	40	45	36½	43¼	2,548,726	1,034,511
1910	37,548	31.6	1,186,341	34.4	408,388	10.88	31	32½	31¾	36	3,845,850	107,318
1911	37,763	24.4	922,298	45.0	414,663	10.98	46½	47¾	50¼	58	2,677,749	2,622,357
1912	37,917	37.4	1,418,337	31.9	452,469	11.93	31	31¾	35⅝	43	36,455,474	723,899
1913	38,399	29.2	1,121,768	39.2	439,596	11.45	37⅝	40¼	37	42½	2,748,743	22,273,624
1914	38,442	29.7	1,141,060	43.8	499,431	12.99	46¼	49¾	50½	56	100,609,272	630,722
1915	40,996	37.8	1,549,030	36.1	559,506	13.65	40⅜	44	39⅞	49½	98,960,481	665,314
1916	41,527	30.1	1,251,837	52.4	655,928	15.80	46¾	54	59½	74	95,105,698	761,644
1917	43,553	36.6	1,592,740	66.6	1,061,474	24.37	70¼	80⅞	72	79¼	125,090,611	2,591,077
1918	44,349	34.7	1,538,124	70.9	1,090,322	24.59	68	74½	67¼	74¾	109,004,734	551,355
1919	40,359	29.3	1,184,030	70.4	833,922	20.66	78⅞	89	100¼	117¼	43,435,994	6,043,834
1920	42,491	35.2	1,496,281	46.0	688,311	16.20	47	52	36⅞	43¼	9,391,096	3,795,638
1921	45,495	23.7	1,078,341	30.2	325,954	7.16	34½	42½	37¼	45	21,236,742	1,733,282
1922	40,790	29.8	1,215,803	39.4	478,948	11.74	43½	50	43	47½	25,413,330	293,208
1923	40,981	31.9	1,305,883	41.4	541,137	13.20	43	49½	47	50⅞	8,795,771	4,244,047
1924	42,110	35.7	1,502,529	47.7	717,189	17.03	53⅞	69	45⅜	50¼	16,777,107	3,040,882
1925	44,872	33.2	1,487,550	38.0	565,506	12.62	40¾	45	40⅛	43¾	39,686,578	184,585
1926[4]	44,394	28.2	1,253,739	39.8	499,531	11.25	46¾	55	----	----	------------	----------

Division of Crop and Livestock Estimates. Figures in italics are census returns. Exports and imports from Commerce and Navigation of United States 1909–1918 and the June issue of Monthly Summaries of Foreign Commerce, 1919–1926.

[1] Based on Dec. 1 price.
[2] Chicago Daily Trade Bulletin. Quotations are for contract 1909–1915.
[3] Oatmeal not included in 1909.
[4] Preliminary.

Table 62.—*Oats: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Maine	125	125	135	136	4, 625	4, 750	6, 075	5, 168
New Hampshire	18	11	12	11	675	429	468	440
Vermont	75	79	84	82	2, 625	3, 002	3, 360	3, 116
Massachusetts	9	8	9	9	315	272	342	306
Rhode Island	1	2	2	3	32	60	66	96
Connecticut	10	13	13	15	290	377	429	480
New York	1, 017	940	1, 017	1, 017	32, 747	33, 840	36, 612	34, 578
New Jersey	68	48	50	50	1, 632	1, 440	1, 500	1, 650
Pennsylvania	1, 170	1, 006	1, 157	1, 111	33, 930	36, 216	40, 495	35, 552
Ohio	1, 516	1, 600	2, 000	1, 980	52, 302	65, 600	83, 000	75, 240
Indiana	1, 739	1, 875	2, 138	2, 234	48, 692	6[illegible], 375	59, 864	67, 020
Illinois	3, 860	4, 374	4, 855	4, 661	135, 100	170, 586	157, 788	123, 516
Michigan	1, 528	1, 513	1, 619	1, 570	48, 896	58, 704	51, 808	51, 810
Wisconsin	2, 539	2, 590	2, 603	2, 577	92, 166	103, 600	126, 246	96, 638
Minnesota	4, 200	4, 587	4, 770	4, 532	155, 400	197, 241	200, 340	129, 162
Iowa	5, 774	5, 855	6, 221	6, 221	209, 019	245, 910	243, 863	195, 962
Missouri	1, 380	1, 630	1, 923	2, 077	34, 500	40, 750	49, 998	41, 540
North Dakota	2, 388	2, 616	2, 354	2, 024	54, 924	88, 944	63. 558	34, 408
South Dakota	2, 304	2, 834	2, 834	1, 984	78, 336	104, 858	96, 356	23, 213
Nebraska	2, 456	2, 456	2, 699	2, 537	81, 048	68, 768	73, 953	52, 516
Kansas	1, 338	1, 369	1, 712	1, 626	34, 922	34, 225	39, 376	35, 122
Delaware	7	4	4	4	182	120	100	112
Maryland	59	48	55	52	1, 758	1, 632	1, 760	1, 706
Virginia	163	180	192	186	3, 586	4, 230	4, 128	4, 836
West Virginia	196	150	188	207	4, 704	3, 600	5, 076	5, 796
North Carolina	300	258	258	310	6, 600	4, 644	4, 902	6, 820
South Carolina	447	360	378	416	10, 728	7, 020	7, 182	10, 483
Georgia	521	275	413	496	9, 378	4, 262	7, 021	11, 408
Florida	33	11	13	14	396	148	182	234
Kentucky	225	235	247	259	4, 725	5, 452	5, 187	6, 346
Tennessee	205	177	221	287	4, 305	3, 717	4, 862	7, 175
Alabama	277	125	131	138	4, 709	1, 875	2, 227	3, 036
Mississippi	120	75	85	63	2, 280	1, 200	1, 615	1, 386
Arkansas	250	275	261	243	5, 750	4, 950	4, 176	5, 346
Louisiana	56	25	30	30	1, 232	500	630	798
Oklahoma	1, 200	1, 200	1, 140	1, 368	24, 000	30, 000	26, 220	38, 304
Texas	1, 370	1, 455	1, 091	1, 964	43, 840	49, 470	13, 419	83, 666
Montana	673	550	605	635	22, 209	16, 225	13, 612	16, 510
Idaho	170	155	170	119	7, 820	5, 580	8, 330	4, 760
Wyoming	165	125	134	134	5, 610	3, 750	4, 690	4, 690
Colorado	226	232	214	195	7, 232	5, 800	5, 778	4, 680
New Mexico	58	56	36	54	1, 160	1, 120	720	1, 512
Arizona	19	10	12	15	570	280	360	525
Utah	81	55	60	57	3, 062	1, 804	2, 820	2, 280
Nevada	3	2	2	2	106	60	80	64
Washington	210	175	254	229	11, 970	6, 738	11, 176	9, 847
Oregon	270	280	320	304	10, 530	7, 840	10, 560	8, 816
California	162	86	151	156	5, 265	1, 565	5. 240	5, 070
United States	40, 981	42, 110	44, 872	44, 394	1, 305, 883	1, 502, 529	1. 487, 550	1, 253, 739

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 63.—*Oats: Yield per acre, by States, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Bus.	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*
Me	38.6	35.0	38.0	37.0	38.0	45.0	38.0
N. H	37.7	35.0	38.0	37.5	39.0	39.0	40.0
Vt	36.0	33.0	34.0	35.0	38.0	40.0	38.0
Mass	34.4	31.0	34.0	35.0	34.0	38.0	34.0
R. I	30.8	28.0	31.0	32.0	30.0	33.0	32.0
Conn	29.8	30.0	28.0	29.0	29.0	33.0	32.0
N. Y	31.6	24.0	30.0	32.2	36.0	36.0	34.0
N. J	27.8	24.0	31.0	24.0	30.0	30.0	33.0
Pa	32.5	28.5	34.0	29.0	36.0	35.0	32.0
Ohio	33.4	23.0	27.0	34.5	41.0	41.5	38.0
Ind	27.6	24.0	21.0	28.0	37.0	28.0	30.0
Ill	32.3	26.5	28.5	35.0	39.0	32.5	26.5
Mich	31.0	18.2	34.0	32.0	38.8	32.0	33.0
Wis	38.1	24.3	41.2	36.3	40.0	48.5	37.5
Minn	36.3	24.0	35.5	37.0	43.0	42.0	28.5
Iowa	36.1	26.0	37.1	36.2	42.0	39.2	31.5
Mo	22.4	20.0	16.0	25.0	25.0	26.0	20.0
N. Dak	27.2	19.0	33.0	23.0	34.0	27.0	17.0
S. Dak	31.6	22.0	31.0	34.0	37.0	34.0	11.7
Nebr	27.8	27.1	23.3	33.0	28.0	27.4	20.7
Kans	22.6	20.5	18.5	26.1	25.0	23.0	21.6
Del	26.4	28.0	23.0	26.0	30.0	25.0	28.0
Md	30.6	27.0	30.0	29.8	34.0	32.0	32.8
Va	21.5	20.5	20.0	22.0	23.5	21.5	26.0
W. Va	24.0	22.0	23.0	24.0	24.0	27.0	28.0

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Bus.	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*
N. C	19.6	18.0	21.0	22.0	18.0	19.0	22.0
S. C	22.1	24.0	24.0	24.0	19.5	19.0	25.2
Ga	17.9	21.0	18.0	18.0	15.5	17.0	23.0
Fla	13.1	13.0	13.0	12.0	18.5	14.0	16.7
Ky	20.5	19.0	18.3	21.0	23.2	21.0	24.5
Tenn	20.5	20.5	18.0	21.0	21.0	22.0	25.0
Ala	18.2	22.0	20.0	17.0	15.0	17.0	22.0
Miss	18.6	20.0	19.0	19.0	16.0	19.0	22.0
Ark	20.8	22.0	25.0	23.0	18.0	16.0	22.0
La	21.7	23.0	22.3	22.0	20.0	21.0	26.6
Okla	21.6	20.0	20.0	20.0	2[illegible].0	23.0	28.0
Tex	23.9	18.0	23.0	32.0	34.0	12.3	42.6
Mont	28.2	24.0	32.0	33.0	29.5	22.5	26.0
Idaho	42.4	43.0	38.0	46.0	36.0	49.0	40.0
Wyo	32.0	30.0	31.0	34.0	30.0	35.0	35.0
Colo	28.0	31.0	25.0	32.0	25.0	27.0	24.0
N. Mex	20.7	27.7	15.6	20.0	20.0	20.0	28.0
Ariz	30.8	35.0	31.0	30.0	28.0	30.0	35.0
Utah	38.6	36.4	39.0	37.8	32.8	47.0	40.0
Nev	36.1	37.7	37.2	35.4	30.0	40.0	32.0
Wash	45.7	50.0	39.2	57.0	38.5	44.0	43.0
Oreg	31.4	32.0	25.0	39.0	28.0	33.0	29.0
Calif	29.5	27.0	35.0	32.5	18.2	34.7	32.5
U. S	30.9	23.7	29.[illegible]	31.9	35.7	33.2	28.2

Division of Crop and Livestock Estimates.

TABLE 64.—*Oats: Acreage, yield per acre, and production for specified countries, average 1909–1913, 1921–1925, annual 1924–1926*

Country	Acreage					Yield per acre					Production				
	Average, 1909–1913 [1]	Average, 1921–1925	1924	1925	1926, preliminary	Average, 1909–1913 [1]	Average, 1921–1925	1924	1925	1926, preliminary	Average, 1909–1913 [1]	Average, 1921–1925	1924	1925	1926, preliminary
NORTHERN HEMISPHERE															
NORTH AMERICA	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Canada	9,597	15,008	14,491	14,672	13,495	36.6	[illegible]2.0	28.0	35.0	30.0	351,690	480,166	405,976	513,384	404,598
United States	37,357	42,850	42,110	44,872	45,945	30.6	30.8	35.7	33.2	27.3	1,143,407	1,318,021	1,502,529	1,487,550	1,253,739
Total	46,954	57,858	56,601	59,544	59,440	31.8	31.1	33.7	33.6	27.9	1,495,097	1,798,187	1,908,505	2,000,934	1,658,337
EUROPE															
United Kingdom:															
England and Wales	2,089	2,037	2,038	1,868	1,864	47.5	47.4	51.5	51.7	56.2	96,913	96,561	104,930	96,530	104,790
Scotland	952	970	956	926	937	46.8	49.0	51.3	54.1	56.0	44,507	47,563	49,070	50,120	52,500
Ireland	1,049	1,124	1,022	993		62.1	50.7	51.4	60.6		65,169	56,989	52,502	60,158	
Norway	264	274	230	241	241	38.9	41.6	46.3	50.0	56.4	10,276	11,406	10,641	12,048	13,604
Sweden	1,961	1,807	1,909	1,801	1,824	43.9	42.4	39.0	45.0	47.2	86,050	76,024	74,392	81,009	86,058
Denmark	1,161	1,119	1,141	1,100		52.2	54.1	55.4	59.9		60,557	60,542	63,208	65,837	61,315
Netherlands	346	380	377	366	381	52.2	51.4	55.4	55.5	68.0	18,070	19,531	20,882	20,314	25,897
Belgium	668	654	654	654	666	65.8	62.6	67.6	65.0	83.7	43,964	40,955	44,207	42,502	55,736
Luxemburg	77	70	73	71	72	43.9	30.4	29.6	35.8	47.2	3,382	2,130	2,162	2,545	3,396
France	10,084	8,521	8,036	8,599	8,719	36.5	35.3	35.4	38.1	45.6	368,462	300,569	305,535	327,648	397,896
Spain	1,276	1,623	1,635	1,798	1,804	22.8	22.3	18.5	24.2	24.2	29,110	36,175	30,170	43,443	43,712
Portugal	(600)	[2] 579	564			11.7	[2] 11.2	11.2			(7,000)	[2] 6,459	6,303	5,684	5,308
Italy	1,276	1,194	1,106	1,202	1,231	29.4	31.7	30.1	39.5	33.0	37,537	37,896	33,296	47,475	40,647
Switzerland	81	51	50	49	51	59.1	54.7	53.9	55.0	60.9	4,784	2,790	2,694	2,694	3,107
Germany	9,529	8,246	8,710	8,531	8,587	55.3	44.1	44.7	45.1	50.7	527,[illegible]78	363,272	389,525	384,743	435,725
Austria	883	739	763	760	761	32.9	30.5	29.9	35.2	41.1	29,0[illegible]	22,556	22,843	26,761	31,282
Czechoslovakia	2,506	2,044	2,090	2,071	2,096	38.4	40.1	39.7	43.4	43.0	96,147	82,029	82,959	89,863	90,130
Hungary	849	786	708	717	689	33.5	28.8	22.2	35.6	34.7	28,464	22,644	15,713	25,532	23,930
Yugoslavia	1,358	925	871	856	871	24.7	22.3	23.9	27.8	28.3	33,516	20,645	20,796	23,772	24,645
Greece	[3] 140	[4] 174				[3] 29.1	[4] 23.6				[3] 4,075	[4] 4,106	4,062	5,688	5,949
Bulgaria	408	357	376	354	319	21.2	23.3	16.9	28.9	23.2	8,651	8,318	6,371	10,228	7,413
Rumania	[2] 2,119	3,133	3,056	2,928	2,665	[2] 28.2	20.1	13.7	17.4	30.0	[2] 59,776	62,819	42,013	50,986	79,850
Poland	6,666	5,921	6,388	6,369	6,471	29.4	32.4	26.0	35.8	32.5	195,825	191,979	166,171	228,146	210,114
Lithuania	961	810	803	853	943	23.8	27.1	23.1	23.0	26.5	22,910	21,916	18,584	19,609	24,998

[1] Where changes in boundary have occurred, the averages are estimates for territory within present boundaries. [2] Four-year average. [3] One-year only. [4] Three-year average.

TABLE 64.—*Oats: Acreage, yield per acre, and production for specified countries, average 1909–1913, 1921–1925, annual 1924–1926*—Continued

Country	Acreage: Average, 1909–1913 [1]	Acreage: Average, 1921–1925	Acreage: 1924	Acreage: 1925	Acreage: 1926, preliminary	Yield per acre: Average, 1909–1913 [1]	Yield per acre: Average, 1921–1925	Yield per acre: 1924	Yield per acre: 1925	Yield per acre: 1926, preliminary	Production: Average, 1909–1913 [1]	Production: Average, 1921–1925	Production: 1924	Production: 1925	Production: 1926, preliminary
NORTHERN HEMISPHERE—Con.															
EUROPE—continued	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Latvia	765	741	826	815	793	25.1	24.6	22.6	25.7	24.0	19,188	18,206	18,670	20,934	19,009
Estonia	394	[2] 390	410	371	362	24.9	[2] 23.3	23.6	23.5	26.3	9,795	[2] 9,100	9,677	8,723	9,530
Finland	999	1,058	1,019	1,073	1,105	20.4	32.6	32.3	37.7	30.9	20,391	34,529	33,913	40,410	34,144
Russia, European	35,514	21,235	25,283	24,573		23.0	19.2	16.7	21.2		817,231	407,921	421,580	[7] 593,868	[7] 762,552
Total European countries reporting area and production all years shown	46,461	42,731	43,714	43,273	43,452	38.6	35.8	34.4	38.3	41.8	1,793,926	1,529,613	1,505,214	1,656,035	1,818,112
Estimated European total, excluding Russia	49,410	45,730	46,620	46,120	46,450						[4] 1,930,700	1,658,000	1,631,300	1,793,000	1,947,700
NORTH AFRICA															
Morocco	25	35	49	45	49	20.0	18.3	22.2	21.4	17.9	(500)	640	1,088	965	875
Algeria	449	611	622	651	621	30.0	22.0	14.7	24.2	14.2	13,489	13,419	9,137	15,768	8,806
Tunis	133	125	116	101	99	27.4	19.5	13.7	27.3	21.6	3,642	2,439	1,585	2,756	2,136
Total	607	771	787	797	769	29.0	21.4	15.0	24.5	15.5	17,631	16,498	11,810	19,489	11,888
ASIA															
Turkey	[3] 380	[3] 221	191	221	222	[3] 56.7	[3] 51.5		51.5		[3] 21,562	[3] 11,391		11,391	
Cyprus		16	17	15			17.7	14.7	19.7		515	283	250	296	
Russia (Asiatic)	5,742	[6] 3,987	3,673	4,301		18.8	[6] 24.7	23.8	25.5		107,687	[6] 98,472	87,505	[7] 109,767	[7] 140,945
Japanese Empire:															
Japan	110	276	265	265	267	44.8	39.3	37.5	40.5	40.3	4,928	10,848	9,933	10,744	10,764
Chosen	141	276	286	268		15.6	15.5	10.2	13.4		2,202	4,279	2,914	3,592	
Total Northern Hemisphere countries reporting area and production all years shown	94,132	101,636	101,367	103,879	103,928	35.2	33.0	33.9	35.5	33.7	3,311,582	3,355,146	3,435,462	3,687,202	3,499,080
Estimated Northern Hemisphere total, excluding Russia and China	97,700	105,200	104,800	107,300	107,500						3,474,000	3,501,000	3,578,000	3,841,000	3,647,000

SOUTHERN HEMISPHERE															
Brazil	------	[2] 16	15	15	------	------	[2] 30.9	29.3	------	------	------	[2] 494	440	------	------
Chile	78	95	133	92	96	42.7	40.9	34.3	56.4	------	3,333	3,884	4,558	5,185	------
Uruguay	66	120	138	149	155	19.5	18.0	23.0	16.4	------	1,285	2,166	3,168	2,440	------
Argentina	2,396	2,662	2,647	3,194	3,171	22.6	22.3	20.2	25.2	22.6	54,246	59,286	53,456	80,433	71,719
Union of South Africa	809	[4] 644	------	------	------	11.9	[4] 9.4	------	------	------	9,661	[4] 6,078	------	------	9,370
Australia	745	[2] 988	1,128	------	------	23.8	[2] 19.9	20.4	------	------	17,768	[2] 19,650	23,059	------	------
New Zealand	366	126	147	103	------	49.1	47.6	47.3	48.8	------	17,978	5,998	6,956	5,028	------
Total Northern and Southern Hemisphere countries reporting area and production all years shown	96,528	104,298	104,014	107,073	107,099	34.9	32.7	33.5	35.2	33.3	3,365,828	3,414,432	3,488,918	3,767,635	3,570,748
Estimated world total, excluding Russia and China	102,200	110,000	109,100	111,900	112,800	------	------	------	------	------	[5] 3,581,000	3,602,000	3,679,000	3,965,000	3,764,000

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture except as otherwise stated. Figures given are for crops harvested during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere.

[1] Where changes in boundary have occurred, the averages are estimates for territory within present boundaries.
[2] Four-year average.
[3] One year only.
[4] Three-year average.
[5] The estimate for the five-year period, 1909–1913, given in this table is somewhat larger than the figure obtained by averaging those five years in Table 65. This is because in the detailed table estimates for warring countries are for post-war boundaries, whereas in Table 65 they are for pre-war territory. As a result, in excluding Russia, which lost territory in the war, a smaller area is excluded in the detailed table than in Table 65.
[6] Two-year average.
[7] Estimates for all Russia distributed between European and Asiatic territory in the same ratio as the 1925 preliminary estimate.

TABLE 65.—*Oats: World production, 1909–1926*

Year	Production in countries reporting all years	World production excluding Russia, preliminary estimate	European total, excluding Russia, preliminary estimate	Selected countries					
				United States	Russia [1]	Germany	France	Canada	Argentina
	Million bushels	*Million bushels*	*Million bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
1909	3,094	3,415	1,863	1,068,289	1,163,076	628,712	383,139	353,466	36,483
1910	2,928	3,223	1,660	1,186,341	1,064,516	544,287	331,866	243,506	47,192
1911	2,822	3,135	1,683	922,298	876,013	530,764	349,247	365,179	69,169
1912	3,408	3,700	1,720	1,418,337	1,089,365	586,987	355,089	391,629	75,783
1913	3,234	3,580	1,909	1,121,768	1,250,590	669,231	357,049	404,669	42,604
1914	2,961	3,266	1,681	1,141,060	[2] 914,913	622,674	318,333	313,078	49,397
1915	3,268	3,594	1,401	1,549,030	[3] 897,470	412,400	238,551	464,954	75,280
1916	2,982	3,259	1,469	1,251,837	[4] 844,783	484,007	277,117	410,211	31,781
1917	2,972	3,217	1,047	1,592,740	[4] 761,177	[5] 249,964	220,336	403,010	75,783
1918	2,967	3,215	1,117	1,538,124	----------	[5] 301,830	[5] 180,553	426,312	38,762
1919	2,578	3,070	1,318	1,184,030	----------	[5] 309,587	[5] 179,823	394,387	57,113
1920	3,147	3,647	1,478	1,496,281	[4] 485,566	[5] 332,490	[5] 291,406	530,710	47,619
1921	2,600	3,137	1,511	1,078,341	[4] 359,413	[5] 344,744	[5] 244,155	426,233	30,606
1922	2,780	3,482	1,543	1,215,803	[4] 408,746	[5] 276,619	[5] 288,264	491,239	55,597
1923	3,185	3,852	1,812	1,305,883	[4] 404,624	[5] 420,731	[5] 336,944	563,998	76,338
1924	3,132	3,679	1,631	1,502,529	[5] 509,084	[5] 389,525	[5] 305,537	405,976	53,456
1925	3,326	3,968	1,797	1,487,550	[5] 703,635	[5] 384,743	[5] 327,648	513,384	80,433
1926 [6]	3,077	3,764	1,932	1,253,739	[5] 903,497	[5] 435,763	[5] 307,895	404,598	71,718

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture. For each year is shown the production during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere. Estimates of world oats production for the period 1894–1908 appear in Agriculture Yearbook, 1924, p. 622.

[1] Includes all Russian territory reporting for the years shown.
[2] Total Russian Empire exclusive of the 10 Vistula Provinces of Russian Poland and the Province of Batum in Transcaucasia.
[3] Exclusive of Russian Poland, Lithuania, parts of Latvia and the Ukraine, and the two Provinces of Batum and Elizabethpol in Transcaucasia.
[4] Estimate for the present territory of the Union of Socialist Soviet Republics exclusive of Turkestan, Transcaucasia, and the Far East, which territory in 1924 produced 20,248,000 bushels.
[5] Present boundaries, therefore not comparable with earlier years.
[6] Preliminary.

Table 66.—*Oats: Farm stocks, supplies and shipments, United States, 1909–1926*

Year beginning August	Old stocks on farms Aug. 1[1]	Crop			Total supplies	Stocks on farms Mar. 1 following[1]	Shipped out of county where grown[1]
		Quantity	Weight per bushel[2]	Quality[3]			
	1,000 bush.	*1,000 bush.*	*Pounds*	*Per cent*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*
1909	27,478	1,068,289	32.7	91.4	1,095,767	385,705	343,968
1910	66,666	1,186,341	32.7	93.8	1,253,007	442,665	363,103
1911	67,801	922,298	31.1	84.6	990,099	289,989	265,944
1912	34,875	1,418,337	33.0	91.0	1,453,212	604,249	438,130
1913	103,916	1,121,768	32.1	89.1	1,225,684	419,481	297,365
1914	62,467	1,141,060	31.5	86.5	1,203,527	379,369	335,539
1915	55,607	1,549,030	33.0	87.5	1,604,637	598,148	465,823
1916	113,728	1,251,837	31.2	88.2	1,365,565	394,211	355,092
1917	47,834	1,592,740	33.4	95.1	1,640,574	599,208	514,117
1918	81,424	1,538,124	33.2	93.6	1,619,548	590,251	421,568
1919	93,045	1,184,030	31.1	84.7	1,277,075	409,730	312,864
1920	54,819	1,496,281	33.1	93.3	1,551,100	683,759	431,687
1921	161,108	1,078,341	28.8	74.7	1,239,449	411,934	258,259
1922	74,513	1,215,803	32.0	87.7	1,290,316	421,118	303,950
1923	70,965	1,305,883	32.1	87.9	1,376,848	447,366	322,971
1924	65,710	1,502,529	33.4	91.4	1,568,239	538,832	422,112
1925	90,179	1,487,550	32.9	91.7	1,577,729	571,248	364,407
1926[4]	107,918	1,253,739	30.9	78.9	1,361,657	----------	----------

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[1] Based on percentage of crop as reported by crop reporters.
[2] Average weight per measured bushel as reported by crop reporters.
[3] Per cent of a "high medium grade" as reported by crop reporters.
[4] Preliminary.

Table 67.—*Oats: Monthly marketings by farmers, as reported by about 3,500 mills and elevators, United Sates, 1917–1925*

Year beginning July	Percentage of year's receipts												
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Season
1917	4.7	16.4	13.5	11.1	7.7	7.8	8.3	8.0	7.1	6.5	4.0	4.9	100.0
1918	8.0	19.6	11.9	9.9	7.2	6.7	6.7	4.5	5.5	6.3	7.0	6.7	100.0
1919	14.4	18.4	10.1	9.2	5.8	8.3	8.2	6.6	4.9	4.3	5.2	4.6	100.0
1920	8.3	18.7	13.8	9.5	5.5	5.8	6.6	6.6	6.0	4.6	6.8	7.8	100.0
1921	15.1	16.5	11.8	7.9	5.3	6.1	7.3	6.9	5.6	4.3	7.2	6.0	100.0
1922	8.9	15.7	11.9	10.1	7.8	8.6	7.4	7.1	6.5	4.7	5.4	5.9	100.0
1923	7.0	17.7	14.1	11.5	6.8	7.6	7.7	7.9	5.2	4.8	4.8	4.9	100.0
1924	14.0	20.7	17.8	11.5	5.6	4.8	4.7	3.5	3.9	3.9	5.0	4.6	100.0
1925	10.4	22.4	13.1	9.3	6.3	6.8	6.1	6.2	5.1	4.2	4.5	5.6	100.0

Division of Crop and Livestock Estimates.

TABLE 68.—*Oats: Receipts at primary markets, averages by groups, 1909–1925 and annual, 1921–1925*

[Thousand bushels; i. e., 000 omitted]

Year beginning August—	Chicago	Milwaukee	Minneapolis	St. Louis	Peoria	Omaha	Total 11 markets[1]
Average:							
1909–1913	100, 873	13, 978	17, 320	21, 439	10, 252	------	------
1914–1920	121, 664	30, 007	31, 750	27, 613	12, 000	15, 837	277, 426
1921–1925	71, 431	19, 646	35, 224	31, 186	12, 833	14, 494	226, 219
1921	77, 828	23, 241	32, 307	25, 949	14, 210	10, 665	217, 468
1922	84, 451	21, 057	24, 870	32, 220	15, 555	14, 772	222, 680
1923	69, 516	19, 729	29, 069	35, 001	13, 419	18, 144	220, 631
1924	74, 690	20, 233	53, 533	34, 211	11, 131	15, 918	262, 501
1925	50, 669	13, 970	36, 342	28, 549	9, 850	12, 972	207, 817
Monthly average, 1921–1925:							
August	12, 335	2, 820	5, 832	2, 931	1, 503	2, 202	34, 630
September	8, 285	2, 320	6, 494	2, 457	1, 089	1, 683	29, 820
October	7, 512	2, 521	5, 144	2, 877	1, 318	1, 627	25, 063
November	5, 072	1, 712	2, 846	2, 088	1, 000	1, 040	16, 757
December	5, 706	1, 540	3, 053	2, 214	1, 031	1, 023	17, 657
January	5, 130	1, 398	2, 395	3, 338	1, 202	1, 153	17, 696
February	5, 080	1, 487	2, 010	2, 544	933	930	15, 245
March	4, 792	1, 287	2, 078	2, 777	1. 041	963	15, 002
April	3, 877	848	1, 490	2, 523	901	957	12, 561
May	4, 555	1, 206	1, 299	2, 805	899	880	14, 387
June	4, 567	1, 239	1, 494	2, 549	938	1, 002	14, 536
July	4, 519	1, 268	1, 089	2, 084	887	1, 034	12, 865

Division of Statistical and Historical Research. Compiled from the Chicago Daily Trade Bulletin and the Annual Reports of the Chicago Board of Trade. Data 1909–1920 available in 1925 Yearbook, p. 813, Table 94.

[1] Includes also Duluth, Toledo, Detroit, Kansas City, and Indianapolis.

TABLE 69.—*Oats: Visible supply in United States, 1st of month, 1909–1926*

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
	1,000 bush.	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*
Average:												
1909–1913	7, 185	13, 460	18, 525	19, 024	17, 969	16, 286	14, 857	14, 521	13, 869	10, 748	7, 866	7, 894
1914–1920	7, 879	14, 984	23, 791	26. 613	28, 498	28, 660	26, 513	25, 203	23, 404	20, 717	17, 141	13, 698
1921–1925	21, 818	34, 206	47, 372	51, 211	50, 468	51, 075	50, 611	49, 063	43, 706	36, 706	28, 498	25, 539
1909	3, 800	5, 183	12, 799	13, 264	13, 586	11, 180	8, 759	8, 639	9, 916	9, 223	6, 905	4, 245
1910	2, 761	12, 551	18, 802	17, 022	15, 505	16, 129	15, 997	15, 769	13, 129	10, 559	8, 125	9, 570
1911	11, 203	20, 742	21, 044	22, 600	20, 315	18, 754	15, 431	14, 366	13, 429	11, 991	8, 052	3, 690
1912	1, 031	4, 160	9, 260	10, 552	10, 774	8, 457	9, 646	12, 343	13, 115	8, 704	8, 105	14, 756
1913	17, 131	24, 662	30, 718	31, 684	29, 664	26, 909	24, 450	21, 489	19, 755	13, 282	8, 144	7, 210
1914	6. 482	20, 124	27, 285	31, 866	32, 471	32, 956	33, 173	33. 258	27, 284	23, 022	12, 623	4, 345
1915	1, 309	2, 924	14, 381	15, 730	20, 928	21, 081	20, 175	20, 265	17, 892	12, 096	16, 192	12, 452
1916	8, 537	27, 691	38, 866	45, 580	47, 467	48, 823	42, 675	36, 740	34, 191	28, 933	17, 454	9, 741
1917	6, 679	7, 277	14, 165	17, 453	18, 595	17, 657	13, 879	13, 947	18, 008	21, 911	20. 822	13, 227
1918	7, 876	19, 309	24, 689	22, 050	29. 143	34, 828	30, 505	27, 666	22, 882	21. 507	15, 827	18, 094
1919	20, 481	19, 411	19, 552	19, 196	16, 922	13, 080	11, 550	10, 401	9, 576	6, 813	8, 642	3, 623
1920	3. 786	8, 149	27, 602	34, 414	33, 961	32, 194	33, 632	34, 142	33, 903	30, 740	28, 426	34, 401
1921	37, 562	60, 455	65, 843	69, 998	69, 198	67, 728	68, 010	68, 529	64, 644	55, 837	47, 950	42, 743
1922	36, 667	38, 355	35, 968	34, 077	32, 940	32, 391	30, 861	27, 683	24, 044	21, 932	13, 514	8, 523
1923	5. 477	10. 111	16, 514	20, 488	18, 686	19, 940	17, 539	17, 741	16, 715	10, 656	6, 720	5. 264
1924	3, 086	11, 403	52, 715	66, 564	67, 265	72, 128	73, 570	72, 386	61, 104	48, 082	35, 331	33, 263
1925	26, 298	50, 706	65, 818	64, 926	64, 251	63, 187	63, 076	58, 974	52, 023	47, 025	38, 976	37, 900
1926	33, 772	43, 671	48, 450	48, 097	48, 288	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from the Chicago Daily Trade Bulletin Reported on the Saturday nearest the first of each month.

Table 70.—*Oats: Classification of cars graded by licensed inspectors, all inspection points*

	Receipts						Shipments					
	1	2	3	4	Sample	Total	1	2	3	4	Sample	Total
	Total of all classes and subclasses under each grade, by cars, annual 1919–1925											
Year beginning Aug. 1—	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
1919	5,662	52,094	96,039	15,887	3,589	173,271	3,167	41,094	62,764	4,100	692	111,817
1920	8,803	60,169	73,072	14,766	6,831	163,641	3,600	45,099	31,811	2,821	2,220	85,551
1921	2,519	31,643	105,103	31,774	6,664	177,703	2,384	49,117	72,955	4,305	1,675	130,436
1922	2,548	47,347	95,984	17,004	4,640	167,523	1,738	45,563	62,601	6,112	1,235	117,249
1923	2,724	41,530	90,759	22,643	11,307	168,963	1,263	34,056	49,152	6,659	2,620	93,750
1924	1,489	33,631	110,377	24,580	14,853	184,930	601	31,348	70,439	8,874	5,978	117,240
1925	2,197	53,585	75,633	17,989	6,260	155,664	1,376	47,866	54,689	4,332	2,861	111,124
	Total inspections by grade and class, Aug. 1, 1925, to July 31, 1926											
Class:												
White	1,214	48,399	74,056	17,334	5,171	146,174	1,000	45,765	54,501	4,270	2,637	108,173
Red	746	4,369	1,286	502	285	7,188	353	1,923	160	49	11	2,496
Gray	30	55	19	6	5	115	------	1	------	------	------	1
Black	2	1	------	------	------	3	------	------	------	------	------	------
Mixed	205	761	272	147	799	2,184	23	177	28	13	213	454
	Total of all classes and subclasses under each grade, by percentages, annual, 1919–1925											
Year beginning Aug. 1—	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
1919	3.3	30.0	55.4	9.2	2.1	100	2.8	36.8	56.1	3.7	0.6	100
1920	5.4	36.8	44.6	9.0	4.2	100	4.2	52.7	37.2	3.3	2.6	100
1921	1.4	17.8	59.1	17.9	3.8	100	1.8	37.7	55.9	3.3	1.3	100
1922	1.5	28.3	57.3	10.1	2.8	100	1.5	38.9	53.4	5.2	1.0	100
1923	1.6	24.6	53.7	13.4	6.7	100	1.4	36.3	52.4	7.1	2.8	100
1924	0.8	18.2	59.7	13.3	8.0	100	0.5	26.7	60.1	7.6	5.1	100
1925	1.4	34.4	48.6	11.6	4.0	100	1.2	43.1	49.2	3.9	2.6	100
	Total inspections by grade and class, Aug. 1, 1925, to July 31, 1926											
Class:												
White	0.8	33.1	50.7	11.9	3.5	100	0.9	42.3	50.4	4.0	2.4	100
Red	10.4	60.8	17.9	7.0	3.9	100	14.1	77.1	6.4	2.0	0.4	100
Gray	26.1	47.8	16.5	5.2	4.4	100	------	100.0	------	------	------	100
Black	66.7	33.3	------	------	------	100	------	------	------	------	------	------
Mixed	9.4	34.8	12.5	6.7	36.6	100	5.0	39.0	6.2	2.9	46.9	100

Grain Division.

TABLE 71.—*Oats, including oatmeal: International trade, average 1910–1914, annual 1924–1926*

[Thousand bushels—i. e., 000 omitted]

Country	Average, 1910–1914		Year ended June 30: 1924		1925		1926, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Algeria	[1] 79	[1] 4,102	277	7,163	795	642	68	2,592
Argentina	[2] 55	[2] 42,569	--------	36,317	--------	48,533	--------	32,006
Australia	[2] 898	[2] 270	139	288	8	324	--------	[3 4] 96
British India	[1 5] 87	[1 5] 43	--------	62	--------	50	--------	53
Bulgaria	--------	[1] 178	--------	[1] 4	([1 6])	10	--------	4
Canada	84	15,245	186	35,914	1,059	42,339	2,246	35,575
Chile	[2] 2	[2] 2,469	--------	1,914	--------	3,810	--------	4,093
Hungary	[1] 1,420	[1] 12,416	2	2,476	280	518	7	3,806
Rumania	[1 5] 72	[1 5] 10,493	2	4,464	6	5,433	--------	1,352
Russia	[1] 1,206	[1] 70,466	--------	9,592	--------	113	--------	1,354
Tunis	[1] 2	[1] 2,875	([1 6])	[3] 2,606	[1] 116	[3] 742	[7 8] 2	[3] 1,468
United States	5,352	9,655	4,244	8,796	3,041	16,777	185	39,687
Yugoslavia	--------	--------	--------	[1] 190	--------	[3] 470	--------	[3] 1,056
PRINCIPAL IMPORTING COUNTRIES								
Austria	[1] 2,295	[1] 114	6,048	[1] 32	6,683	[8 9] 4	4,877	[8 10] 10
Belgium	8,420	62	6,218	327	8,285	113	9,623	29
Ceylon	[3 8] 90	--------	[3 9] 52	--------	[3] 52	--------	[3] 61	--------
Cuba	1,291	--------	1,675	--------	[11] 883	--------	--------	--------
Czechoslovakia	--------	--------	2,692	3,236	2,747	1,432	4,747	44
Denmark	[1] 4,687	[1] 152	2,848	558	2,621	488	842	411
Estonia	--------	--------	[3 9] 1,769	--------	242	--------	[3] 669	--------
Finland	[3 8] 1,150	[3 8] 356	5,095	1	1,297	15	1,529	16
France	29,846	122	5,341	3,584	4,068	900	7,231	388
Germany	37,202	33,575	1,356	5,733	20,076	7,223	28,204	5,334
Greece	--------	--------	[1] 212	--------	[3] 694	--------	[3 12] 5	--------
Irish Free State	--------	--------	--------	--------	3,351	[4] 2,344	2,862	3,485
Italy	8,158	65	6,240	22	8,731	128	7,743	42
Japan	[1] 5	[1] 42	[1] 1,172	--------	[3] 258	--------	[3] 190	([6])
Latvia	--------	--------	[1] 1,490	[1] 98	[3] 505	[1] 416	[3] 568	[7 8] 21
Netherlands	[1] 38,862	[1] 30,771	5,971	604	5,569	502	7,477	287
Norway	[1 13] 497	[1 13] 27	[4] 2,677	4	[4] 1,494	6	1,512	11
Poland	--------	--------	[1 4] 11	[1 4] 413	[1 4] 5,505	[1 4] 10	3,966	2,364
Sweden	[1] 6,468	[1] 1,899	6,878	521	3,229	715	2,900	330
Switzerland	[1] 12,464	[1] 13	10,036	7	9,099	4	10,062	4
Union of South Africa	[2] 366	[2] 434	[14] 324	[4] 169	[14] 252	[4] 515	[14] 183	[4] 128
United Kingdom	68,371	[2] 1,591	43,137	1,883	33,760	[4] 1,104	37,683	1,136
Total, 35 countries	229,429	240,004	116,092	127,978	124,706	135,740	136,042	137,182

Division of Statistical and Historical Research. Official sources except where otherwise noted.

[1] Year ended July 31, International Yearbook of Agricultural Statistics.
[2] Average of calendar years 1909–1913.
[3] International Crop Report and Agricultural Statistics.
[4] Oats only.
[5] Average for the seasons 1911–12 to 1913–14.
[6] Less than 500 bushels.
[7] Ten months ended May 31.
[8] International Yearbook of Agricultural Statistics.
[9] Eleven months.
[10] Ten months ended Apr. 30.
[11] Six months.
[12] Two months.
[13] Season 1913–14.
[14] Oatmeal only.

TABLE 72.—*Oats: Estimated price per bushel, received by producers, United States, 1909–1926*

Year beginning August—	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Weighted av.
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Average:													
1909–1913	40.9	38.8	38.4	38.2	38.2	39.0	39.8	40.3	40.9	41.5	41.8	40.9	39.9
1914–1920	58.8	55.9	54.6	54.8	56.4	58.7	60.3	62.1	64.3	65.2	64.0	61.9	58.5
1921–1925	38.6	37.4	38.4	38.9	40.6	42.2	43.0	43.0	42.5	42.9	43.1	41.8	40.4
1909	46.2	41.6	41.0	40.6	41.5	43.9	45.5	45.8	44.4	43.2	42.6	41.9	43.2
1910	40.0	37.3	35.6	34.6	33.8	33.2	33.0	32.6	32.8	34.0	36.1	38.8	36.2
1911	40.3	41.4	43.2	44.4	45.0	46.3	48.6	50.9	54.0	55.6	53.9	48.4	46.1
1912	39.6	34.3	33.6	32.8	32.0	32.3	32.8	33.1	33.6	35.1	36.8	37.6	34.9
1913	38.4	39.4	38.8	38.6	39.2	39.2	39.1	39.2	39.5	39.8	39.4	37.8	38.9
1914	39.5	42.8	43.1	43.4	44.4	47.6	51.1	52.8	53.4	52.4	49.0	46.0	44.9
1915	42.0	36.5	34.7	35.5	37.6	41.8	43.6	42.4	42.3	42.4	41.2	40.2	39.3
1916	41.6	43.8	46.8	50.7	51.9	53.3	56.0	59.2	66.2	70.4	69.4	71.3	51.4
1917	67.7	62.0	62.0	64.2	70.2	76.3	82.4	87.6	87.4	82.0	77.2	74.6	72.1
1918	71.6	70.6	69.6	69.6	70.8	67.6	63.4	64.2	68.4	[illegible]	71.0	73.1	70.1
1919	73.5	70.0	68.6	69.6	74.3	80.4	83.6	87.6	94.5	100.6	103.7	93.2	80.3
1920	76.0	65.4	57.6	50.2	45.8	43.7	41.8	40.6	38.0	37.4	36.8	34.7	51.1
1921	32.0	30.6	30.1	29.7	30.6	31.9	34.7	36.6	37.2	38.2	37.8	36.2	33.4
1922	33.6	33.4	36.4	38.8	40.3	41.5	42.4	43.5	44.8	45.3	43.7	40.2	39.0
1923	37.6	38.0	39.4	40.8	42.6	43.4	45.4	46.2	46.5	46.3	46.8	49.4	42.6
1924	49.1	47.1	48.9	47.4	50.6	54.0	53.4	49.7	44.7	45.4	48.3	45.3	48.3
1925	40.7	38.1	37.2	37.6	39.1	40.0	39.2	38.8	39.4	39.5	38.9	37.7	38.8
1926	37.9	35.6	39.0	39.8	41.1								

Division of Crop and Livestock Estimates. Mean of prices reported on 1st of month and 1st of succeeding month, August, 1909–December, 1923.

TABLE 73.—*Oats: Estimated price per bushel, received by producers, December 1, average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Me.	56	55	47	56	65	55	63	N. C.	74	70	67	74	84	76	69
N. H.	64	60	60	64	73	64	65	S. C.	84	73	76	82	97	90	67
Vt.	61	59	56	63	69	59	60	Ga.	81	64	75	85	95	87	69
Mass.	64	59	63	63	70	65	70	Fla.	80	65	77	80	90	90	65
R. I.	64	60	60	60	75	65	70	Ky.	57	48	56	56	67	59	53
Conn.	64	60	65	62	70	61	66	Tenn.	59	48	53	60	69	64	55
N. Y.	53	47	51	55	62	52	50	Ala.	77	65	75	80	87	78	68
N. J.	55	45	55	55	64	54	50	Miss.	74	64	66	76	85	78	66
Pa.	52	45	48	52	62	51	49	Ark.	57	45	57	62	64	58	52
Ohio	43	33	46	45	52	39	39	La.	74	70	69	68	83	80	64
Ind.	39	29	40	39	48	37	35	Okla.	46	27	45	52	53	51	37
Ill.	38	29	39	39	47	35	35	Tex.	55	39	55	57	59	63	38
Mich.	42	36	41	43	48	40	40	Mont.	42	34	37	38	47	53	53
Wis.	40	33	39	43	48	38	40	Idaho	45	32	46	44	58	43	45
Minn.	33	23	32	34	43	31	34	Wyo.	46	38	40	47	58	46	45
Iowa	34	23	35	37	44	32	35	Colo.	46	33	45	46	58	50	44
Mo.	43	30	44	45	51	44	42	N. Mex.	60	48	58	70	60	64	56
N. Dak.	28	21	26	28	36	27	33	Ariz.	74	65	68	80	81	75	75
S. Dak.	30	20	32	31	40	28	36	Utah	55	37	47	58	70	62	60
Nebr.	34	21	34	34	43	36	40	Nev.	74	75	75	81	72	65	62
Kans.	40	27	41	43	47	44	44	Wash.	52	42	58	50	59	52	53
Del.	59	46	57	60	66	65	59	Oreg.	50	38	57	45	61	51	50
Md.	53	45	51	54	64	53	50	Calif.	65	51	64	60	87	61	48
Va.	64	56	59	63	72	70	63								
W. Va.	62	52	58	63	73	62	59	U. S.	39.3	30.2	39.4	41.4	47.7	38.0	39.8

Division of Crop and Livestock Estimates.

TABLE 74.—*Oats, No. 3 white: Weighted average price per bushel of reported cash sales, at Chicago, 1909–1926*

Year beginning August—	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Weighted average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1909–1913	0.38	0.39	0.38	0.38	0.39	0.41	0.40	0.40	0.41	0.41	0.42	0.42	0.40
1914–1920	.57	.56	.55	.57	.60	.62	.62	.64	.67	.66	.65	.65	.60
1921–1925	.39	.40	.41	.42	.44	.45	.44	.43	.43	.43	.44	.43	.42
1909	0.38	0.39	0.40	0.40	0.44	0.48	0.47	0.44	0.42	0.40	0.38	0.41	0.42
1910	.35	.34	.32	.32	.32	.33	.31	.31	.32	.34	.39	.44	.33
1911	.41	.45	.47	.48	.47	.50	.52	.53	.57	.55	.53	.49	.50
1912	.33	.33	.33	.32	.33	.33	.33	.32	.35	.38	.40	.40	.35
1913	.42	.43	.40	.40	.40	.39	.39	.39	.39	.40	.40	.37	.40
1914	.42	.48	.46	.48	.49	.53	.58	.57	.57	.54	.49	.53	.50
1915	.41	.34	.36	.36	.42	.48	.45	.42	.44	.43	.39	.41	.41
1916	.44	.46	.49	.55	.53	.57	.56	.61	.69	.70	.67	.78	.54
1917	.61	.60	.60	.65	.77	.82	.89	.93	.89	.77	.77	.77	.71
1918	.70	.72	.69	.72	.72	.65	.58	.63	.70	.69	.70	.78	.70
1919	.73	.68	.70	.73	.82	.86	.86	.93	1.01	1.09	1.13	.91	.80
1920	.70	.62	.54	.51	.48	.44	.42	.42	.36	.39	.37	.34	.51
1921	.32	.35	.31	.33	.34	.34	.36	.36	.38	.38	.37	.36	.35
1922	.32	.38	.42	.43	.44	.43	.44	.45	.46	.45	.43	.40	.41
1923	.38	.40	.43	.43	.44	.46	.48	.47	.48	.48	.51	.54	.45
1924	.50	.48	.50	.50	.58	.58	.53	.48	.42	.45	.49	.44	.50
1925	.41	.39	.39	.40	.42	.40	.41	.40	.42	.41	.40	.42	.41
1926	.38	.38	.44	.42	.46	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from the Chicago Daily Trade Bulletin. Data for 1899–1908 available in 1924 Yearbook, p. 628, Table 94.

BARLEY

TABLE 75.—*Barley: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage harvested	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Farm value Dec. 1	Value per acre [1]	Chicago, cash price per bushel, low malting to fancy [2]				Domestic exports, including barley flour and malt, fiscal year beginning July 1 [3]
							December		Following May		
							Low	High	Low	High	
	1,000 acres	*Bushels of 48 lbs.*	*1,000 bushels*	*Cents*	*1,000 dollars*	*Dollars*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Bushels*
Average:											
1909–1913	7,620	24.3	184,812	59.7	110,249	14.47	64.4	89.6	57.8	89.8	8,086,910
1914–1920	7,923	25.4	201,577	83.2	167,655	21.16	86.4	115.9	97.6	128.7	28,196,354
1921–1925	7,516	24.8	186,567	56.8	105,915	14.09	61.2	80.0	66.2	81.8	24,471,656
1909	7,699	24.4	187,973	54.8	102,947	13.37	55	72	50	68	4,453,836
1910	7,743	22.5	173,832	57.8	100,426	12.97	72	90	75	115	9,506,511
1911	7,627	21.0	160,240	86.9	139,182	18.25	102	130	68	132	1,654,966
1912	7,530	29.7	223,824	50.5	112,957	15.00	43	77	45	68	17,873,937
1913	7,499	23.8	178,189	53.7	95,731	12.77	50	79	51	66	6,945,300
1914	7,565	25.8	194,953	54.3	105,903	14.00	60	75	74½	82	28,711,849
1915	7,148	32.0	228,851	51.6	118,172	16.53	62	77	70	83	30,820,658
1916	7,757	23.5	182,309	88.1	160,646	20.71	95	125	128	165	20,318,620
1917	8,933	23.7	211,759	113.7	240,758	26.95	125	163	105	176	28,717,055
1918	9,740	26.3	256,225	91.7	234,942	24.12	88	105	110	130	26,997,053
1919	6,720	22.0	147,608	120.6	178,080	26.50	125	168	140	190	34,554,673
1920	7,600	24.9	189,332	71.3	135,083	17.77	50	98	56	75	27,254,572
1921	7,414	20.9	154,946	41.9	64,934	8.76	48	64	62	75	27,543,395
1922	7,317	24.9	182,068	52.5	95,560	13.06	66	75	63	72	21,909,292
1923	7,835	25.2	197,691	54.1	107,038	13.66	80	100	69	90	13,913,419
1924	6,925	26.2	181,575	74.1	134,590	19.44	54	81	80	95	28,543,163
1925	8,088	26.8	216,554	58.9	127,453	15.76	58	80	57	77	30,449,011
1926 [4]	8,200	23.3	191,182	57.4	109,677	13.38	56	78	------	------	----------

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[1] Based on farm price Dec. 1.
[2] Chicago Daily Trade Bulletin.
[3] From reports of Bureau of Foreign and Domestic Commerce, 1909–1918 and June issues of Monthly Summaries of Foreign Commerce of the United States 1919–1926. Barley flour included from 1918–1922.
[4] Preliminary.

TABLE 76.—*Barley: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Maine	4	3	3	4	120	78	105	120
New Hampshire	1				26			
Vermont	9	5	6	6	261	155	192	180
New York	190	135	157	179	5,092	4,131	4,553	5,066
New Jersey		1	1	1		29	27	33
Pennsylvania	12	11	15	16	269	292	383	400
Ohio	74	55	110	116	1,998	1,540	3,410	3,712
Indiana	30	20	32	37	690	480	736	925
Illinois	228	225	315	410	6,612	7,200	10,395	12,710
Michigan	150	115	129	133	3,600	3,370	3,160	3,790
Wisconsin	465	391	461	521	13,252	12,512	16,965	17,974
Minnesota	962	915	1,098	1,307	24,050	[illegible],280	32,940	32,675
Iowa	158	136	175	219	4,503	4,216	5,478	6,680
Missouri	6	4	6	9	162	100	186	216
North Dakota	1,250	1,468	1,732	1,472	21,875	38,168	38,970	21,050
South Dakota	890	790	915	778	20,025	21,330	23,790	7,858
Nebraska	339	251	233	227	9,492	6,275	5,662	4,699
Kansas	924	447	380	266	20,513	7,376	6,080	3,032
Maryland	4	11	12	10	132	385	396	343
Virginia	10	15	16	14	270	405	416	434
North Carolina		7	10	15		161	230	390
Kentucky	7	5	6	7	189	120	156	231
Tennessee	17	20	22	25	391	400	506	750
Oklahoma	129	209	126	176	2,838	4,807	1,764	4,752
Texas	108	166	116	220	2,592	4,150	835	7,700
Montana	105	104	156	179	2,678	2,600	3,276	4,296
Idaho	93	118	124	112	3,999	3,658	5,456	4,144
Wyoming	28	25	34	41	840	725	1,122	1,353
Colorado	300	327	410	417	8,700	6,540	8,610	6,672
New Mexico	11	6	5	8	209	90	85	208
Arizona	36	20	20	25	1,260	600	700	875
Utah	22	14	18	17	893	399	774	680
Nevada	5	6	8	7	127	237	384	280
Washington	85	70	91	64	3,884	1,582	3,094	2,176
Oregon	88	65	96	82	3,080	1,430	3,168	2,378
California	1,095	765	1,050	1,080	33,069	16,754	32,550	32,400
United States	7,835	6,925	8,088	8,200	197,691	181,575	216,554	191,182

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[1] Preliminary.

TABLE 77.—*Barley: Yield per acre, by States, 1921–1926*

State	Av., 1921–1925	1921	1922	1923	1924	1925	1926	State	Av., 1921–1925	1921	1922	1923	1024	1925	1926
	Bus.	*Bus.*	*Bus.*	*Bus*	*Bus.*	*Bus.*	*Bus.*		*Bus.*	*Bus*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*
Me	29.0	26.0	28.0	30.0	26.0	35.0	30.0	Va	26.1	23.0	27.5	27.0	27.0	26.0	31.0
N. H		23.0	28.0	26.5				N. C					23.0	23.0	26.0
Vt	29.2	25.0	29.0	29.0	31.0	32.0	30.0	Ky	25.8	24.0	28.0	27.0	24.0	26.0	33.0
N. Y	26.7	21.0	26.0	26.8	30.6	29.0	28.3	Tenn	21.9	21.0	22.5	23.0	20.0	23.0	30.0
N. J					29.0	27.0	33.0	Okla	19.6	22.0	17.0	22.0	23.0	14.0	27.0
Pa	24.3	21.5	25.5	22.4	26.5	25.5	25.0	Tex	19.8	24.0	19.0	24.0	25.0	7.2	35.0
Ohio	26.3	26.0	19.5	27.0	28.0	31.0	32.0	Mont	23.4	20.5	25.0	25.5	25.0	21.0	24.0
Ind	21.2	19.0	17.0	23.0	24.0	23.0	25.0	Idaho	36.8	32.0	34.0	43.0	31.0	44.0	37.0
Ill	30.0	26.3	29.5	29.0	32.0	33.0	31.0	Wyo	29.8	29.0	28.0	30.0	29.0	33.0	33.0
Mich	24.2	17.5	25.7	24.0	29.3	24.5	28.5	Colo	22.2	22.0	19.0	29.0	20.0	21.0	16.0
								N. Mex	18.0	24.0	15.0	19.0	15.0	17.0	26.0
Wis	30.4	22.5	32.1	28.5	32.0	36.8	34.5								
Minn	26.7	20.0	26.5	25.0	32.0	30.0	25.0	Ariz	33.0	32.0	33.0	35.0	30.0	35.0	35.0
Iowa	28.6	23.5	28.6	28.5	31.0	31.3	30.5	Utah	35.8	32.0	35.0	40.6	28.5	43.0	40.0
Mo	25.6	22.0	23.0	27.0	25.0	31.0	24.0	Nev	34.7	31.1	29.4	25.4	39.5	48.0	40.0
N. Dak	21.4	15.5	25.5	17.5	26.0	22.5	14.3	Wash	32.6	36.8	24.0	45.7	22.6	34.0	34.0
								Oreg	29.8	32.0	27.0	35.0	22.0	33.0	29.0
S. Dak	23.1	17.0	23.0	22.5	27.0	26.0	10.1	Calif	27.7	25.0	30.5	30.2	21.9	31.0	30.0
Nebr	24.0	24.7	18.0	28.0	25.0	24.3	20.7								
Kans	18.4	20.0	17.3	22.2	16.5	16.0	11.4	U. S	24.8	20.9	24.9	25.2	26.2	26.8	23.3
Md	32.0	30.0	32.0	33.0	35.0	33.0	34.3								

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TABLE 78.—*Barley: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*

Country	Acreage: Average 1909–1913 [1]	Acreage: Average 1921–1925	Acreage: 1924	Acreage: 1925	Acreage: 1926, preliminary	Yield per acre: Average 1909–1913 [1]	Yield per acre: Average 1921–1925	Yield per acre: 1924	Yield per acre: 1925	Yield per acre: 1926, preliminary	Production: Average 1909–1913 [1]	Production: Average 1921–1925	Production: 1924	Production: 1925	Production: 1926, preliminary
NORTHERN HEMISPHERE															
NORTH AMERICA	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Canada	1,574	3,133	3,407	4,076	3,795	28.8	26.2	26.1	27.6	27.3	45,275	82,009	88,807	112,668	103,651
United States	7,620	7,516	6,925	8,088	8,200	24.3	24.8	26.2	26.8	23.3	184,812	186,567	181,575	216,554	191,182
Mexico	[2] 1,436	717	711	779		4.9	5.5	5.6	5.3		7,021	3,972	3,988	4,164	
Total North American countries reporting area and production all years shown	9,194	10,649	10,332	12,164	11,995	25.0	25.2	26.2	27.1	24.6	230,087	268,576	270,382	329,222	294,833
EUROPE															
United Kingdom:															
England and Wales	1,488	1,352	1,314	1,318	1,148	34.0	32.5	33.6	35.8	37.7	50,658	43,893	44,142	47,133	43,260
Scotland	191	158	152	153	126	37.6	39.0	39.6	43.6	40.4	7,173	6,157	6,020	6,673	5,087
Ireland	166	161	159	148	143	45.2	38.4	36.8	42.4		7,510	6,180	5,853	6,276	
Norway	89	137	136	139	139	32.2	32.0	34.5	37.3	37.7	2,867	4,383	4,692	5,180	5,246
Sweden	448	409	428	411	442	33.6	31.8	31.1	35.1	33.6	15,035	12,991	13,303	14,427	14,869
Denmark	639	695	745	744	768	42.0	46.4	45.9	49.2	43.7	26,860	32,246	34,219	36,574	33,528
Netherlands	68	63	63	73	67	48.1	52.4	56.5	48.7	49.6	3,270	3,302	3,557	3,556	3,325
Belgium	88	84	78	79	82	50.5	49.1	47.9	52.7	46.6	4,446	4,127	3,735	4,165	3,824
Luxemburg	3	8	9	8	7	27.3	20.0	19.3	21.9	29.6	82	160	174	175	207
France	1,987	1,713	1,765	1,727	1,818	26.6	25.6	27.2	27.3	29.7	52,826	43,892	48,051	47,161	54,017
Spain	3,510	4,243	4,344	4,414	4,366	21.3	21.2	19.3	22.4	21.8	74,689	92,268	83,700	98,925	95,021
Portugal		[3] 170	156				[3] 11.8	13.2				[2] 2,001	2,054		
Italy	647	576	572	576	587	16.4	17.9	15.2	22.3	18.8	10,638	10,283	8,685	12,861	11,023
Switzerland	13	16	16	15	16	33.9	33.3	32.4	35.5	35.3	441	533	519	533	565
Germany	3,464	3,198	3,573	3,545	3,668	38.6	31.3	30.8	33.7	30.8	133,787	100,186	110,226	119,377	113,106
Austria	421	320	341	348	354	23.9	22.1	21.1	26.5	28.0	10,065	7,072	7,208	9,217	9,918
Czechoslovakia	2,275	1,673	1,676	1,714	1,743	31.3	30.0	26.6	33.4	29.5	71,108	50,121	44,585	57,208	51,335
Hungary	1,322	1,099	1,008	1,019	1,040	24.5	20.2	14.6	25.0	21.8	32,369	22,198	14,712	25,431	22,655
Yugoslavia	1,058	902	839	883	867	19.1	15.6	15.0	20.5	19.9	20,229	14,027	13,479	13,145	17,289

Malta [4]	5	6	6	6	6	22.8	43.8	44.8	44.8	44.8	114	263	269	269	269
Greece	[5] 369	[3] 411	-	574	-	[5] 18.8	[3] 16.3	-	16.6	-	[5] 6,953	[3] 6,681	4,284	9,515	-
Bulgaria	516	535	529	544	546	20.1	20.2	15.0	26.9	21.9	10,380	10,818	7,945	14,652	11,970
Rumania	[3] 3,378	4,315	4,573	4,211	3,834	[3] 18.3	12.8	6.7	11.1	20.2	[3] 61,677	55,295	30,759	46,818	77,391
Poland	3,048	2,855	3,011	3,025	3,060	22.7	22.7	18.4	25.5	23.3	69,055	64,865	55,489	77,039	71,404
Lithuania	536	451	484	507	532	16.5	20.5	19.2	22.2	19.3	8,820	9,234	9,817	11,252	10,[illegible]
Latvia	463	414	443	436	470	17.1	16.9	16.8	18.7	18.4	7,922	6,979	7,437	8,169	8,661
Estonia	329	307	307	284	300	18.8	18.3	18.0	18.6	19.4	6,201	5,610	5,539	5,289	5,815
Finland	278	273	272	272	287	17.8	21.2	21.9	23.8	21.9	4,947	5,782	5,969	6,467	6,295
Russia, European	23,281	12,627	14,965	12,589	-	16.4	12.5	9.9	19.3	-	381,235	158,013	147,582	243,471	-
Total: European countries reporting area and production all years shown	26,264	25,902	26,744	26,451	26,273	26.1	23.4	21.1	25.6	25.7	685,689	606,685	563,731	676,996	676,320
Estimated European total excluding Russia	27,000	26,600	27,500	27,300	27,000	-	-	-	-	-	[6] 701,300	610,000	575,900	694,500	693,000
AFRICA															
Morocco	(3,000)	2,862	3,120	3,369	3,447	-	14.1	17.1	14.3	8.0	(38,000)	40,271	53,278	48,227	27,558
Algeria	3,395	2,995	3,158	3,317	3,461	13.5	10.3	5.9	11.2	6.4	45,974	30,950	18,706	37,309	22,212
Tunis	1,228	1,033	746	1,244	1,406	6.4	6.6	3.4	5.5	5.9	7,826	6,843	2,526	6,890	8,268
Egypt	398	382	372	367	333	29.8	29.9	28.9	30.4	30.3	11,867	11,427	10,754	11,144	10,097
Total	8,021	7,272	7,396	8,297	8,647	12.9	12.3	11.5	12.5	7.9	103,667	89,491	85,264	103,570	68,135
ASIA															
Turkey	-	-	2,348	2,602	2,179	-		-	22.2	-	-	-	-	57,758	-
Cyprus	(115)	114	112	110	-	-	19.2	15.8	18.9	-	2,183	2,185	1,766	2,077	-
Syria	-	555	570	486	560	-	[3] 11.1	9.0	10.9	17.8	-	[3] 6,141	5,128	5,298	9,944
India	8,877	6,976	7,126	6,898	-	16.4	19.2	19.2	17.9	-	145,496	133,793	137,060	123,387	-
Russia (Asiatic)	2,912	[7] 2,078	2,006	2,149	-	12.6	[7] 14.1	13.6	14.5	-	36,795	[7] 29,221	27,196	31,246	-
Japanese Empire:															
Japan	3,042	2,630	2,458	2,466	2,432	29.4	30.3	30.5	37.1	31.7	89,531	79,817	75,094	91,471	77,178
Chosen	1,623	2,139	2,124	2,164	-	19.9	17.4	19.0	18.7	-	32,243	37,154	40,354	40,363	38,304
Total Northern Hemisphere countries reporting area and production all years shown	46,521	46,553	46,930	49,378	49,347	23.8	22.4	21.2	24.3	22.6	1,108,944	1,044,569	994,401	1,201,259	1,116,466
Estimated Northern Hemisphere total, excluding Russia and China	64,200	62,800	63,100	66,000	65,200	-	-	-	-	-	1,400,000	1,339,000	1,289,000	1,490,000	1,418,000

[1] Where changes in boundary have occurred, averages are estimates for territory within present boundaries.
[2] Three-year average.
[3] Four-year average.
[4] Includes maslin.
[5] One year only.
[6] The estimate for the five-year period, 1909–1913, given in this table is somewhat larger than the figure obtained by averaging those five years in Table 79. This is because in the detailed table estimates for warring countries are for post-war boundaries, whereas in Table 79 they are for pre-war territory. As a result in excluding Russia, which lost territory during the war, a smaller area is excluded in the detailed table than in Table 79.
[7] Two-year average.

TABLE 78.—*Barley: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*—Continued

Country	Acreage					Yield per acre					Production				
	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926, preliminary	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926, preliminary	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926, preliminary
SOUTHERN HEMISPHERE	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Chile	111	148	162	126	143	36.8	34.0	30.6	42.0		4,090	5,026	4,964	5,294	
Uruguay	[3] 7	5	8	7	8	[3] 11.1	14.4	12.9	15.3		[3] 78	72	103	107	
Argentina	230	726	824	900	979	19.1	13.7	8.5	18.9	19.8	[3] 4,395	9,924	6,974	17,054	19,337
Union of South Africa [5]	[5] 109	[2] 102	1,045			[5] 11.7	[2] 11.7				[5] 1,274	[2] 1,191			
Australia	154	[3] 290	260			19.6	[3] 20.4	20.3			3,021	[3] 5,905	5,277		
New Zealand	35	24	25	26		36.1	35.6	33.2	38.2		1,264	854	831	994	
Total Southern Hemisphere countries reporting area and production all years shown	230	726	824	900	979	19.1	13.7	8.5	18.9	19.8	4,395	9,924	6,974	17,054	19,337
Estimated Southern Hemisphere total	820	1,480	1,560	1,630							17,200	26,070	22,280	33,640	
Total Northern and Southern Hemisphere countries reporting area and production all years shown	46,751	47,179	47,754	50,278	50,326	23.8	22.4	21.0	24.2	22.6	1,113,339	1,054,493	1,001,375	1,218,313	1,135,803
Estimated world total, excluding Russia and China	65,000	64,200	64,700	67,600							[6] 1,417,000	1,365,000	1,311,000	1,524,000	

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture except as otherwise stated. Estimates given are for crops harvested during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere.

[1] Where changes in boundary have occurred, averages are estimates for territory within present boundaries.
[2] Three-year average.
[3] Four-year average.
[4] One year only.
[6] The estimate for the five-year period, 1909–1913, given in this table is somewhat larger than the figure obtained by averaging those five years in Table 79. This is because in the detailed table estimates for warring countries are for post-war boundries, whereas in Table 79 they are for pre-war territory. As a result in excluding Russia, which lost territory during the war, a smaller area is excluded in the detailed table than in Table 79.
[5] Excludes native locations which produced 38,550 bushels in 1917–18 and 29,056 bushels in 1920–21.

TABLE 79.—*Barley: World production, 1909–1926*

Year	Production in countries reporting all years	World production excluding Russia, preliminary estimate	European total excluding Russia, preliminary estimate	Selected countries: United States	Russia [1]	Germany	Japan	Canada	India
	1,000,000 bushels	*1,000,000 bushels*	*1,000,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
1909	890	1,338	621	187,973	501,869	160,568	87,185	55,398	--------
1910	791	1,242	560	173,832	487,919	133,332	81,953	28,846	--------
1911	836	1,326	606	160,240	436,569	145,136	86,480	44,415	--------
1912	875	1,345	589	223,824	496,352	159,922	90,559	49,398	--------
1913	895	1,400	637	178,189	600,232	168,709	101,477	48,319	--------
1914	800	1,213	546	194,953	[2] 432,615	144,125	85,774	36,201	125,300
1915	812	1,244	477	228,851	[3] 429,161	114,077	9[illegible],959	54,017	143,033
1916	767	1,201	507	182,309	[4] 304,857	128,450	[illegible]9,335	42,770	147,887
1917	716	1,170	426	211,759	[4] 325,025	[5] 89,886	88,896	55,058	155,680
1918	830	1,273	420	256,225	----------	[5] 93,504	87,769	77,287	155,587
1919	646	1,116	479	147,008	----------	[5] 87,741	89,356	56,389	129,827
1920	692	1,143	551	189,332	[4] 216,292	[5] 82,344	84,909	63,311	149,567
1921	688	1,246	567	154,946	[4] 119,251	[5] 89,056	82,323	59,709	117,087
1922	683	1,313	601	182,068	[4] 136,755	[5] 73,824	81,411	71,865	145,973
1923	797	1,427	667	197,691	[4] 159,241	[5] 108,446	68,858	76,998	145,460
1924	745	1,311	576	181,575	[5] 174,778	[5] 110,226	75,024	88,807	137,060
1925	888	1,524	695	216,554	[5] 274,716	[5] 119,377	91,471	112,668	123,387
1926 [6]	808	--------	691	191,182	----------	[5] 113,124	77,178	103,651	--------

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture except as otherwise stated. For each year is shown the production during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere. Estimates of world barley production for the period 1894–1908 appear in Agriculture Yearbook, 1924, p. 635.

[1] Includes all Russian territory reporting for years named.
[2] Total Russian Empire exclusive of the 10 Vistula Provinces of Russian Poland and the Province of Batum in Transcaucasia.
[3] Exclusive of Russian Poland, Lithuania, parts of present Latvia and Ukraine and two Provinces of Transcaucasia.
[4] Estimated production within present boundaries of the Union of Socialist Soviet Republics excluding Turkestan, Transcaucasia, and the Far East, which regions in 1924 produced 20,897,000 bushels.
[5] New boundaries and therefore not comparable with earlier years.
[6] Preliminary.

TABLE 80.—*Barley: Monthly marketings by farmers, as reported by about 3,500 mills and elevators, United States, 1917–1925*

Year beginning July	Percentage of year's receipts: July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Season
1917	2.2	15.0	23.4	16.5	8.5	8.6	6.5	7.5	6.1	2.9	1.8	1.0	100.0
1918	2.4	9.7	8.4	4.4	7.8	3.3	1.3	.7	2.9	27.5	30.7	.9	100.0
1919	18.5	19.2	14.3	9.9	6.4	7.5	5.4	3.1	3.7	3.4	3.0	5.6	100.0
1920	7.0	16.5	15.0	9.9	9.9	7.2	6.7	5.5	6.5	4.2	5.7	5.9	100.0
1921	35.0	14.0	10.5	7.8	4.4	4.2	3.9	4.3	4.2	3.0	4.4	4.3	100.0
1922	17.4	22.9	14.6	10.8	5.2	6.0	4.8	3.2	3.5	1.9	2.7	7.0	100.0
1923	10.3	23.7	15.1	9.9	7.8	6.5	4.1	3.5	3.1	2.6	2.3	11.1	100.0
1924	10.0	25.7	20.3	14.0	6.2	4.7	4.3	5.2	2.6	2.5	1.6	2.9	100.0
1925	16.4	19.1	18.4	11.7	6.6	5.1	4.0	3.4	3.1	2.0	3.3	6.9	100.0

Division of Crop and Livestock Estimates.

TABLE 81.—*Barley: Farm stocks, supplies and shipments, United States, 1910–1926*

Year beginning August	Old stocks on farms Aug. 1[1]	Crop			Total supplies	Stocks on farms Mar. 1 following[1]	Shipped out of county where grown[1]
		Quantity	Weight per bushel[2]	Quality[3]			
	1,000 bushels	*1,000 bushels*	*Pounds*	*Per cent*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
1910	8,075	173,832	46.9	88.1	181,907	33,498	86,955
1911	5,763	160,240	46.0	84.9	166,003	24,754	91,620
1912	2,591	223,824	46.8	86.2	226,415	62,301	120,143
1913	11,252	178,189	46.5	86.4	189,441	44,126	86,262
1914	7,609	194,953	46.2	87.5	202,562	42,889	87,834
1915	6,336	228,851	47.4	90.5	235,187	58,301	98,965
1916	10,982	182,309	45.2	84.4	193,291	33,244	79,257
1917	3,775	211,759	46.6	90.9	215,534	44,416	84,056
1918	4,510	256,225	46.9	89.8	260,735	81,746	99,987
1919	11,897	147,608	45.2	84.8	159,505	33,820	50,471
1920	4,122	189,332	46.0	88.2	193,454	65,229	68,663
1921	13,487	154,946	44.4	82.5	168,433	42,294	55,738
1922	7,497	182,068	46.2	88.5	189,565	42,469	66,560
1923	6,805	197,691	45.3	86.6	204,496	44,900	68,190
1924	6,359	181,575	47.0	88.7	187,934	40,576	68,071
1925	5,728	216,554	45.9	88.1	222,282	52,915	76,450
1926 [4]	9,730	191,182	45.9	84.3	200,912	----------	----------

Division of Crop and Livestock Estimates.

[1] Based on percentage of entire crop as reported by crop reporters.
[2] Average weight per measured bushel as reported by crop reporters.
[3] Per cent of a "high medium grade" as reported by crop reporters.
[4] Preliminary.

TABLE 82.—*Barley: Receipts at markets named, averages by groups, 1909–1925 and annual, 1921–1925*

(Thousand bushels—i. e. 000 omitted)

Year beginning August	Minneapolis	Duluth	Chicago	Milwaukee	Omaha	Total five markets	Fort William and Port Arthur[1]
Average:							
1909–1913	21,792	10,150	24,922	15,636	----------	----------	5,769
1914–1920	30,067	8,202	22,495	14,246	----------	----------	8,094
1921–1925	17,450	8,516	9,660	10,329	735	46,690	21,594
1921	11,945	5,154	7,507	9,341	1,075	35,112	11,597
1922	14,259	3,835	10,073	9,446	801	38,414	15,756
1923	13,641	3,926	9,755	9,077	785	37,184	15,910
1924	23,158	15,287	11,336	13,127	600	63,508	28,045
1925	24,246	14,379	9,540	10,652	415	59,232	36,662
Monthly average, 1921–1925:							
August	2,126	1,247	1,117	1,230	----------	----------	----------
September	2,858	3,392	1,189	1,278	128	8,844	4,078
October	2,429	1,505	1,258	1,254	143	6,599	4,472
November	1,746	784	780	909	87	4,297	3,748
December	1,407	175	912	910	----------	----------	2,343
January	1,374	52	752	824	----------	----------	850
February	1,070	60	800	718	52	2,700	554
March	1,234	90	781	807	----------	----------	719
April	861	148	666	546	----------	----------	776
May	842	245	491	718	----------	----------	1,539
June	879	474	515	654	----------	----------	869
July	613	344	461	490	----------	----------	1,253
August	----------	----------	----------	----------	----------	----------	403

Division of Statistical and Historical Research. Compiled from Minneapolis Daily Market Record, Chicago Daily Trade Bulletin, Grain Dealers Journal, and Canadian Statistics. Data 1909–1920 available in 1925 Yearbook, p. 828, Table 114.

[1] Crop year begins in September.

TABLE 83.—Barley: *International trade, average 1910–1914, annual 1924–1926*

[Thousand bushels—i. e., 000 omitted]

Country	Year ended June 30							
	Average, 1910–1914		1924		1925		1926, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Algeria	[1] 213	[1] 5,482	202	9,452	1,964	957	282	4,504
Argentina	[3] 3	[3] 764	[3] 1	9,313	[3] 5	4,229	([3] [4])	6,383
Australia	[2] 159	[2] 51	([4])	1,905	70	1,553	--------	[5] 760
British India	[1] [6] 23	[1] 10,640	([1] [4])	[7] 11,367	[1] 4	[7] 18,[illegible]75	[8] 5	[7] 684
Bulgaria	--------	[1] 1,876	([1] [4])	[1] 484	([1] [4])	523	--------	1,117
Canada	66	5,210	2	16,577	([4])	27,796	10	30,893
Chile	[3] 88	[3] 1,062	--------	3,737	--------	2,362	--------	2,480
Czechoslovakia	--------	--------	[1] 106	[5] 8,182	2,292	3,153	1,709	5,134
Hungary	[1] 229	[1] 11,836	9	327	199	386	2	2,264
Poland	--------	--------	[1] 3	[1] 2,194	[1] 227	[5] 4,550	[8] 20	[5] 7,375
Rumania	[1] [9] 63	[1] [9] 16,804	([4])	24,714	([4])	7,743	--------	12,675
Russia	[1] 124	[1] 173,240	--------	14,069	--------	3,235	--------	36,940
Sweden	[1] 28	[1] 102	204	19	31	540	11	523
Tunis	[1] 328	[1] 3,055	[1] 128	[5] 6,622	[1] 523	[5] 313	[8] 48	[5] 2,680
United States	--------	7,896	--------	11,209	--------	23,653	--------	27,182
Yugoslavia	--------	--------	--------	[1] 218	--------	[5] 1,197	--------	[5] 1,105
PRINCIPAL IMPORTING COUNTRIES								
Austria	[1] 716	[1] 8,123	3,910	[1] 45	3,890	[5] [10] 32	3,772	[8] 355
Belgium	19,351	3,079	12,491	81	12,068	103	13,361	250
Ceylon	--------	--------	[5] [10] 11	--------	[5] 12	--------	[5] 13	--------
Cuba	255	--------	432	--------	[11] 251	--------	--------	--------
Denmark	[1] 8,024	[1] 2,906	10,640	622	5,128	3,071	2,914	2,909
Egypt	[1] 732	[1] [12] 42	182	35	126	107	314	([4])
Estonia	--------	--------	[5] 372	--------	[5] 140	--------	[5] 273	--------
Finland	--------	--------	273	--------	42	--------	89	--------
France	6,711	787	6,728	831	2,113	914	2,188	698
Germany	148,297	136	23,085	13	31,018	2,849	53,060	525
Greece	--------	--------	1,368	--------	[5] 1,498	--------	[5] [13] 16	--------
Irish Free State	--------	--------	--------	--------	784	100	1,613	55
Italy	824	20	386	61	212	610	127	106
Japan	[1] 15	--------	[1] 108	--------	[5] 48	--------	[5] 42	--------
Latvia	--------	--------	[1] 415	[1] 26	[5] 196	[1] 203	[5] 176	[4] 4
Netherlands	[1] 38,039	[1] 26,975	15,267	556	9,293	782	14,905	425
Norway	[1] 4,550	--------	2,988	([4])	1,501	([4])	1,652	--------
Portugal	[1] 24	[1] 5	--------	--------	--------	--------	--------	--------
Spain	640	117	83	662	553	928	1,560	258
Switzerland	[1] 1,140	[1] 1	3,101	1	2,956	1	3,102	([4])
Syria and Lebanon	--------	--------	[5] [10] 64	--------	[5] [10] 466	--------	[5] 453	--------
United Kingdom	48,550	[3] 101	43,676	131	41,140	[3] 81	35,712	[3] 492
Total, 38 countries	273,192	280,310	126,235	123,453	118,750	110,045	137,412	148,776

Division of Statistical and Historical Research. Official sources except where otherwise noted.

[1] Year ended July 31, as compiled in the International Yearbook of Agricultural Statistics.
[2] Average of calendar years 1909–1913.
[3] Year ended Dec. 31.
[4] Less than 500 bushels.
[5] International Crop Report and Agricultural Statistics.
[6] Average for seasons 1909–10 to 1911–12.
[7] Sea trade only.
[8] Ten months ended May 31, International Yearbook of Agricultural Statistics.
[9] Average for seasons 1911–12 to 1913–14.
[10] Eleven months.
[11] Six months.
[12] Average for seasons 1912–13 to 1913–14.
[13] Two months.

TABLE 84.—*Barley: Estimated price per bushel, received by producers, United States, 1909–1926*

Year beginning August	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Weighted average
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Average:													
1909–1913	60.1	60.0	60.5	60.5	60.9	62.4	63.3	63.6	64.6	64.7	63.0	59.4	60.8
1914–1920	88.1	85.7	84.3	84.4	85.7	88.5	91.9	95.6	98.8	99.1	94.8	90.8	87.2
1921–1925	58.2	56.1	57.3	57.3	58.1	59.8	60.5	61.1	61.2	61.8	61.1	60.7	58.6
1909	57.9	54.0	53.4	53.6	55.8	58.4	59.8	60.0	58.1	56.1	54.8	54.3	55.6
1910	56.0	56.6	55.7	56.6	58.8	62.0	63.6	66.0	71.6	73.9	72.0	69.7	60.8
1911	73.2	79.4	83.3	85.9	86.6	88.8	91.1	91.6	94.2	93.6	86.5	74.4	81.9
1912	60.2	54.2	54.3	52.2	50.2	50.6	50.2	48.8	48.4	50.5	53.2	52.2	52.7
1913	53.0	56.0	55.8	54.2	53.0	52.3	51.8	51.4	50.5	49.2	48.3	46.3	53.0
1914	48.8	52.2	51.8	53.0	54.3	58.6	65.3	66.2	64.2	62.9	58.9	56.2	54.8
1915	54.3	49.4	48.4	50.8	53.2	58.3	60.6	58.4	58.4	59.6	59.4	59.3	53.8
1916	66.1	74.7	79.8	85.6	87.6	89.9	94.8	99.6	111.2	119.7	113.0	110.6	83.4
1917	112.2	112.0	112.6	112.5	120.1	129.2	146.5	165.6	164.4	147.0	126.9	114.2	122.5
1918	105.4	98.2	95.2	93.3	91.5	89.0	86.1	89.0	98.3	106.6	108.8	113.6	100.0
1919	117.2	115.4	116.2	118.8	125.4	133.6	133.2	134.6	143.2	147.4	145.2	131.5	124.9
1920	113.0	98.1	86.4	76.5	67.8	60.8	57.0	55.6	51.8	50.4	51.1	50.0	70.7
1921	48.2	46.2	43.6	41.8	42.8	44.0	47.0	51.2	54.6	57.0	55.0	51.0	48.4
1922	47.7	46.2	49.2	52.0	55.6	56.8	56.2	58.0	59.6	60.8	58.3	54.7	51.8
1923	52.2	51.9	54.7	55.2	57.6	56.5	58.0	60.0	61.0	60.0	61.9	68.8	56.8
1924	75.7	75.6	81.4	79.7	76.2	82.4	84.8	81.5	76.1	75.9	76.4	73.5	77.1
1925	67.1	60.8	57.6	58.0	58.4	59.5	56.3	54.6	54.8	55.1	53.7	55.3	58.7
1926	55.0	52.9	54.4	56.0	56.4								

Division of Crop and Livestock Estimates. Mean of prices reported on 1st of month and 1st of succeeding month, August, 1909–December, 1923.

TABLE 85.—*Barley: Estimated price per bushel, received by producers, December 1 average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Me	95	86	100	100	108	80	92	Va	87	72	80	80	105	97	90
N. H	97	110	98	85	105	85		Ky	85	61	85	84	101	95	86
Vt	92	80	97	95	103	83	85	Tenn	100	100	80	100	110	110	96
N. Y	76	62	74	75	91	77	75	Okla	63	45	55	70	70	75	58
Pa	75	62	65	72	90	86	80	Tex	69	45	65	68	76	90	53
Ohio	67	51	65	63	85	70	62	Mont	60	60	50	48	69	72	64
Ind	64	48	58	65	77	71	66	Idaho	62	47	65	58	82	56	60
Ill	60	46	58	58	75	63	58	Wyo	65	65	60	65	72	61	62
Mich	68	57	65	64	80	72	65	Colo	56	37	59	54	72	58	55
Wis	63	51	57	61	78	66	65	N. Mex	76	61	95	80	60	85	65
Minn	49	34	47	44	69	52	51	Ariz	90	80	85	95	88	100	85
Iowa	54	42	49	52	70	57	56	Utah	69	48	55	70	87	85	72
Mo	78	65	72	78	82	95	80	Nev	91	80	100	83	110	82	85
N. Dak	42	29	39	38	62	43	46	Wash	68	52	74	60	85	68	65
S. Dak	44	29	42	40	64	47	52	Oreg	73	50	74	67	100	73	65
								Calif	76	56	63	70	116	75	58
Nebr	47	28	47	44	63	54	58								
Kans	49	29	45	49	65	58	61	U. S	56.3	41.9	52.5	54.1	74.1	58.9	57.4
Md	80	67	75	80	93	87	80								

Division of Crop and Livestock Estimates.

Table 86.—*Barley, No. 2: Weighted average price per bushel, Minneapolis, 1909–1926*

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Weighted average[1]
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909–1913	0.59	0.63	0.63	0.63	0.63	0.69	0.66	0.66	0.67	0.65	0.61	0.60	0.64
1914–1920	.95	.92	.93	.95	.99	1.03	1.05	1.11	1.12	1.11	1.02	1.00	1.02
1921–1925	.63	.63	.63	.64	.64	.66	.68	.67	.69	.68	.67	.68	.62
1909	.45	.48	.49	.52	.57	.61	.60	.58	.54	.54	.53	.60	.54
1910	.61	.63	.63	.66	.70	.77	.74	.81	.88	.75	.77	.87	.74
1911	.85	.94	.95	.98	.91	1.05	1.00	.95	1.01	.99	.76	.60	.92
1912	.46	.49	.50	.47	.45	.49	.48	.46	.46	.50	.52	.48	.48
1913	.58	.61	.56	.53	.50	.52	.50	.48	.47	.48	.47	.45	.51
1914	.59	.58	.55	.59	.57	.68	.75	.70	.70	.70	.66	.68	.65
1915	.59	.48	.51	.56	.61	.70	.66	.65	.68	.70	.68	.69	.63
1916	.81	.81	1.03	1.11	1.07	1.17	1.17	1.21	1.36	1.48	1.38	1.49	1.17
1917	1.31	1.33	1.28	1.27	1.49	1.56	1.88	2.12	1.82	1.46	1.23	1.18	1.49
1918	1.02	.95	.91	.94	.92	.90	.87	.93	1.09	1.13	1.12	1.21	1.00
1919	1.33	1.27	1.29	1.33	1.52	1.52	1.37	1.51	1.60	1.74	1.49	1.16	1.43
1920	1.02	.99	.92	.82	.74	.69	.65	.67	.61	.59	.57	.62	.74
1921	.58	.55	.50	.54	.47	.51	.56	.58	.61	.62	.56	.56	.55
1922	.49	.54	.57	.60	.61	.57	.60	.59	.64	.61	.58	.59	.58
1923	.56	.58	.60	.61	.62	.62	.68	.70	.75	.70	.73	.76	.63
1924	.80	.81	.85	.81	.87	.93	.94	.88	.81	.84	.84	.84	.84
1925	.72	.66	.65	.63	.65	.65	.62	.62	.63	.65	.64	.67	.67
1926	.63	.62	.65	.64	.67	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from Minneapolis Daily Market Record.

[1] Average of daily prices weighted by carlot sales.

TABLE 87.—*Flaxseed: Acreage, production, value, foreign trade, net supply, etc., United States, 1909–1926*

Year	Acreage	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Farm value Dec. 1	Value per acre [1]	Imports, year beginning July 1			Exports (domestic and foreign), year beginning July 1			Net supply
							Seed	Oil (in terms of seed) [2]	Total	Seed	Oil (in terms of seed) [2]	Total	
	1,000 acres	*Bush. of 56 lbs.*	*1,000 bushels*	*Cents*	*1,000 dollars*	*Dollars*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Average:													
1909–1913	2,490	7.9	19,543	151.9	29,688	11.92	7,258	[3] 147	7,405	83	210	293	26,655
1914–1920	1,666	7.1	11,805	242.9	28,680	17.22	14,156	473	14,629	23	407	430	26,004
1921–1925	2,156	8.3	17,837	214.7	33,410	17.31	18,198	3,025	21,223	(4)	142	142	38,968
1909	*2,083*	9.5	19,699	152.8	30,093	14.45	5,002	(5)	5,002	65	91	156	*24,545*
1910	2,467	5.2	12,718	231.7	29,472	11.95	10,499	(5)	10,499	1	70	71	*23,146*
1911	2,757	7.0	19,370	182.1	35,272	12.79	6,842	295	7,137	26	99	125	26,381
1912	2,851	9.8	28,073	114.7	32,202	11.29	5,294	69	5,364	17	694	711	32,726
1913	2,291	7.8	17,853	119.9	21,399	9.34	8,653	77	8,730	306	96	402	26,182
1914	1,645	8.4	13,749	126.0	17,318	10.53	10,666	214	10,880	67	485	552	24,077
1915	1,387	10.1	14,030	174.0	24,410	17.60	14,679	20	14,699	3	286	288	28,441
1916	1,474	9.7	14,296	248.6	35,541	24.11	12,394	44	12,438	1	481	482	26,253
1917	1,984	4.6	9,164	296.6	27,182	13.70	13,367	20	13,387	22	476	499	22,052
1918	1,910	7.0	13,369	340.1	45,470	23.81	8,427	396	8,823	16	439	455	21,737
1919	1,503	4.8	7,178	438.5	31,475	20.94	23,392	1,820	25,212	49	457	506	31,982
1920	1,757	6.1	10,752	176.7	18,999	10.81	16,170	799	16,969	1	225	226	27,517
1921	1,108	7.2	8,029	145.1	11,648	10.51	13,632	8,998	22,630	2	149	151	30,508
1922	1,113	9.3	10,375	211.5	21,941	19.71	25,006	3,027	28,033	(6)	[7] 166	166	38,242
1923	2,014	8.5	17,060	210.7	35,951	17.91	19,577	951	20,528	(5)	[7] 140	140	37,448
1924	3,469	9.1	31,547	227.4	71,728	20.68	13,419	1,258	14,677	(5)	[7] 128	128	*46,096*
1925	3,078	7.3	22,424	226.5	50,783	16.50	19,354	892	20,246	(5)	[7] 125	125	42,545
1926 [8]	2,897	6.7	19,459	194.1	37,775	13.04							

Division of Crop and Livestock Estimates and Division of Statistical and Historical Research. Compiled from Foreign Commerce and Navigation of the United States, 1909–1918, and June issues of Monthly Summary of Foreign Commerce, 1919–1926. Figures in italics are census returns.

[1] Based on farm price Dec. 1.
[2] Oil converted to seed on basis of 7½ pounds to a gallon and 2½ gallons of oil to the bushel.
[3] 3-year average.
[4] Not separately reported except for 1 year.
[5] Not separately reported.
[6] Less than 500 bushels for the 6 months ended Dec. 31, 1922; not separately reported since that date.
[7] Represents domestic oil only. Exports of "foreign" linseed oil not separately reported since December, 1922, but included with exports of "other vegetable oils (foreign), not elsewhere specified." Exports of "foreign" linseed oil for the 6 months ended Dec. 31, 1922, were the equivalent of 260 bushels of flaxseed.
[8] Preliminary.

TABLE 88.—*Flaxseed: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Wisconsin	8	8	11	11	97	104	152	132
Minnesota	527	712	740	910	5,270	8,117	7,400	8,554
Iowa	6	8	10	12	56	94	105	139
Missouri	-----	1	1	2	-----	9	8	16
North Dakota	1,050	1,873	1,461	1,271	8,085	15,920	9,496	6,736
South Dakota	284	548	559	475	2,414	4,713	3,801	2,755
Nebraska	4	8	6	7	44	56	54	61
Kansas	24	57	45	38	182	370	306	262
Montana	110	246	244	171	902	2,140	1,098	804
Wyoming	1	-----	-----	-----	10	-----	-----	-----
Colorado	-----	8	1	-----	-----	24	4	-----
United States	2,014	3,469	3,078	2,897	17,060	31,547	22,424	19,459

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 89.—*Flaxseed: Yield per acre, by States, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Bu.	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*		*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*
Wis.	12.5	10.5	13.0	12.1	13.0	13.8	12.0	Kans.	6.7	6.7	6.0	7.6	6.5	6.8	6.9
Minn.	10.2	9.5	10.0	10.0	11.4	10.0	9.4	Mont.	6.7	5.0	7.2	8.2	8.7	4.5	4.7
Iowa	10.1	8.7	10.4	9.4	11.7	10.5	11.6	Wyo.	-----	5.7	7.0	10.0	-----	-----	-----
Mo.	-----	-----	-----	-----	9.0	7.5	8.0	Colo.	-----	-----	-----	-----	3.0	4.5	-----
N. Dak.	7.7	6.5	9.3	7.7	8.5	6.5	5.3								
S. Dak.	8.0	6.5	9.5	8.5	8.6	6.8	5.8	U. S.	8.3	7.2	9.3	8.5	9.1	7.3	6.7
Nebr.	8.6	8.0	8.0	11.0	7.0	9.0	8.7								

Division of Crop and Livestock Estimates.

TABLE 90.—*Flax: Acreage and production in specified countries, average 1909-1913, 1921-1925, annual 1924-1926*—Continued

Country	Acreage					Seed production					Fiber production				
	Average, 1909-1913 [1]	Average, 1921-1925	1924	1925	1926, preliminary	Average, 1909-1913 [1]	Average, 1921-1925	1924	1925	1926, preliminary	Average, 1909-1913 [1]	Average, 1921-1925	1924	1925	1926, preliminary
SOUTHERN HEMISPHERE	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Chile	[3] 748	[2] 675				19	[2] 7				[3] 127	[2] 969			
Uruguay	[3] 126,528	116,287	146,000	185,100	187,771	[3] 951	1,197	1,542	2,029						
Argentina [7]	4,113,434	5,224,757	6,322,543	6,201,100	6,672,000	31,117	52,365	45,084	75,113	68,890					
Australia	[4] 1,056	[3] 452	131			[4] 9	[3] 4				[4] 128	[5] 40	60		
New Zealand	[5] 2,565	8,685	6,679	8,100			120	85	90						
Total Southern Hemisphere countries reporting acreage or production all years shown	4,239,962	5,341,044	6,468,543	6,386,200	6,859,771	31,117	52,365	45,084	75,113	68,890					
Total Northern and Southern Hemisphere countries reporting acreage or production all years shown	11,967,737	11,951,151	15,231,066	15,707,143	15,583,293	88,842	98,903	110,262	139,033	129,251					
Estimated world total [8]	15,870,000	15,560,000	19,033,000	19,402,000		111,186	119,694	132,625	158,197		1,220,700	1,154,800	1,114,100	1,496,700	

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture except as otherwise stated. Estimate given are for crops harvested during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere with the exception of India. See note on India.

[1] Where changes in boundary have occurred averages are estimates for territory within present boundaries.
[2] Three-year average.
[3] Four-year average.
[4] Two-year average.
[5] One year only.
[7] Acreage figures are for area sown. Figures of area harvested are not available for all years but official figures for 2 years and semiofficial figures for 14 years show an average harvested area 10 per cent below the sown area, although the percentage varies widely from year to year.
[8] Excludes a few minor producing countries for which no statistics are available and which do not enter into world trade. No figures are included for Germany, whose acreage in 1913 was 37,800 acres and has now fallen from 118,000 acres in 1921 to 54,900 in 1926. No production figures are available.

Finland	[5] 12,236	14,766	13,074	13,500	13,600						2,700	3,239	2,804	3,536	
Russia, including Asiatic territory	3,165,082	2,661,350	2,950,000	3,898,000	3,889,000	18,984	14,887	16,523	23,740	25,904	759,990	672,715	624,708	890,543	
Total European countries reporting acreage or production, all years shown, including Asiatic Russia	4,195,101	3,593,729	3,965,903	5,060,943	4,955,111	26,105	21,188	23,486	31,760	34,001	372,451	363,678	378,697	483,317	460,671
NORTH AFRICA															
Kenya		7,077	3,029	552			[3] 24	12				[3] 1,216	576		
Morocco		40,924	45,700	49,500	49,400		356	433	402	315					
Algeria	1,366	648	793	568		13	7	4	6		188	[4] 441			
Tunis	(8,000)	5,588	5,253	4,400	5,700	37	30	17	37	39					
Egypt	[4] 4,628	3,181	3,337	3,720		[5] 37	31	25	39		[5] 7,265	2,091	1,742	2,388	
Total North African countries reporting acreage or production all years shown	8,000	46,512	50,953	53,900	55,100	37	386	450	439	354					
ASIA															
India [6]	3,824,880	3,478,000	3,695,000	3,572,000		20,578	18,664	20,040	16,040						
Japanese Empire:															
Japan	12,139	49,782	37,209	51,500		[3] 98	304	213	271		30,003	[3] 58,041	48,487		
Chosen	3,000	3,386	3,450	3,709								1,142	1,258	1,186	
Total Northern Hemisphere countries reporting acreage or production all years shown	7,727,775	6,610,107	8,762,523	9,320,943	8,723,522	57,725	46,538	65,178	63,920	60,361					
Estimated Northern Hemisphere total	11,626,000	10,209,000	12,557,000	13,008,000		79,091	66,001	85,908	80,954		1,220,400	1,153,800	1,113,100	1,495,700	

[1] Where changes in boundary have occurred averages are estimates for territory within present boundaries.
[2] Three-year average.
[3] Four-year average.
[4] Two-year average.
[5] One year only.
[6] Figures are for crop sown in autumn of year given and harvested in spring of the succeeding year.

TABLE 93.—*Flaxseed: Receipts at Duluth, 1909–1925*

[Thousand bushels—i. e., 000 omitted]

Year beginning September	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Total
Average:													
1909–1913	406	1,960	3,623	1,873	481	133	128	127	165	256	527	155	9,334
1914–1920	170	740	1,640	812	204	104	111	145	182	255	325	153	4,841
1921–1925	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1909	673	3,185	4,489	651	172	42	59	122	148	57	179	51	9,828
1910	379	823	1,442	368	64	56	37	18	18	13	38	14	3,270
1911	281	1,105	3,015	1,259	689	313	137	167	109	247	354	47	7,723
1912	229	2,084	6,408	3,433	1,113	190	359	188	494	780	1,743	582	17,603
1913	467	2,603	2,763	1,153	365	62	48	139	58	185	323	81	8,247
1914	89	1,362	2,212	562	154	92	221	224	126	87	187	29	5,345
1915	15	228	2,765	1,670	462	223	39	32	39	74	121	169	5,837
1916	33	909	3,610	1,445	249	114	223	156	364	106	129	72	7,410
1917	184	272	838	539	87	8	45	101	129	310	150	24	2,687
1918	154	1,097	1,385	630	216	80	111	245	138	121	322	135	4,634
1919	194	314	81	227	88	102	90	111	59	621	792	365	3,044
1920	524	997	589	611	171	107	47	144	421	467	572	280	4,930
1921	409	567	801	356	107	72	126	43	85	167	81	16	2,830
1922	515	1,143	912	391	169	57	74	57	86	542	112	225	4,283
1923	1,272	2,454	1,518	365	120	111	105	63	253	94	119	26	6,500
1924	1,728	6,178	6,197	642	156	110	96	170	249	394	459	241	16,620
1925	2,409	2,693	2,391	693	-----	-----	-----	-----	-----	-----	-----	-----	-----

Division of Statistical and Historical Research. Compiled from annual reports of the Duluth Board of Trade.

TABLE 94.—*Flaxseed used in the production of oil, United States, 1919–1926*

[Thousand bushels—i. e., 000 omitted]

Year beginning July	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	Total
1918	-----------	-----------	1,041	4,785	-----------
1919	6,899	7,684	6,336	6,407	27,326
1920	6,542	6,341	6,343	6,332	25,558
1921	5,812	7,539	6,713	3,441	23,505
1922	5,583	8,602	8,292	8,689	31,166
1923	8,223	8,970	9,575	9,434	36,202
1924	7,550	11,530	12,516	9,128	40,724
1925 [1]	7,822	11,798	10,651	7,783	38,054
1926 [1]	9,507	11,085	-----------	-----------	-----------

Division of Statistical and Historical Research. Compiled from reports of the Bureau of the Census.

[1] Quarterly reports from January-December, 1926, subject to revision.

TABLE 95.—*Flaxseed: International trade, average 1911–1913, annual 1923–1925*

[Thousand bushels—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	1	25, 562	3	40, 030	1	53, 453	(1)	37, 821
British India	[2] 323	[2] 14, 409	226	15, 357	247	13, 010	[3,4] 3	[4] 14, 246
Canada	89	10, 645	797	2, 871	395	3, 101	(1)	5, 502
China		648		314		209		199
Eritrea [3]			111	172	250	210	1	379
Esthonia				20	101	111	11	36
Latvia [3]			270	421	408	736	576	988
Lithuania				[3] 744		734		810
Morocco		338		280		283		304
Poland			1	45	6	264	145	370
Rumania	19	120	(1)	1	(1)	2	1	25
Russia	80	5, 739		[3] 192	[3] 6	[3] 1, 175	(1 3)	[3] 1, 914
Tunis	(1)	39	(1 3)	[3] 41	(1)	21	(1)	53
Uruguay		994		750		1, 110		1, 474
PRINCIPAL IMPORTING COUNTRIES								
Australia	103	(1)	[5] 747	(1 3)	[5] 769	(1)	[3] 863	(1 3)
Austria [3]			2	(1)	17	(1)	23	(1)
Austria-Hungary	1, 913	41						
Belgium	9, 313	5, 965	2, 453	176	3, 694	245	3, 112	283
Czechoslovakia			505	(1)	837	[3] 2	668	[3] 11
Denmark	1		633		865	(1)	575	
Finland	110	(1)	115		177	(1 3)	192	
France	6, 304	60	6, 167	33	6, 498	30	5, 887	20
Germany	15, 312	210	2, 206	1	5, 109	24	9, 871	66
Hungary			2	12	13	11	31	8
Italy	1, 698	1	1, 470	3	2, 288	1	1, 836	2
Japan	[6] 27	[6] 27	337	1	406	1	362	(1)
Netherlands	8, 741	2, 488	7, 743	155	11, 479	165	10, 221	232
Norway	445		494		605		597	
Spain			544		620		516	
Sweden	911	7	1, 204	(1)	1, 212	(1)	1, 335	(1)
United Kingdom	15, 908		15, 153		17, 765		13, 521	
United States	7, 298	101	24, 332		16, 589		16, 510	
Other countries	575	139	134	88	257	59	694	38
Total	69, 171	67, 533	65, 649	61, 716	70, 609	74, 957	67, 551	64, 781

Division of Statistical and Historical Research. Official sources except where otherwise noted.

[1] Less than 500 bushels.
[2] Two-year average.
[3] International Yearbook of Agricultural Statistics.
[4] Sea trade only.
[5] Year beginning July 1.
[6] One year only.

TABLE 96.—*Flaxseed: Estimated price per bushel, received by producers, United States, 1909–1926*

Year beginning September—	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Weighted average
Average:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1909–1913	167.0	166.4	163.3	161.1	166 5	172.4	173.5	154.8	175.9	171.5	169.0	170.7	165.1
1914–1920	274.8	260.7	254.9	257.7	263.2	270.8	276.9	281.0	281.1	275.5	278.8	185.8	267.1
1921–1925	198.1	201.0	203.6	210.5	221.4	231.3	234.7	234.7	237.3	228.4	220.1	213.3	207.6
1909	123.0	131.3	146.4	162.0	182.0	193.0	193.5	201.7	202.5	189.5	196.6	214.8	148.6
1910	227.2	231.8	230.6	226.4	227.5	237.3	237.6	238.2	233.4	215.3	202.4	201.4	229.8
1911	204.3	207.8	196.4	184.6	189.0	187.4	187.6	186.2	193.0	201.7	186.8	168.9	195.8
1912	155.2	140.6	124.0	110.4	107.8	114.2	116.3	114.0	115.0	114.6	116.0	123.2	127.4
1913	125.2	120.6	119.3	122.0	126.0	130.2	132.6	133.8	135.8	136.4	143.4	145.0	123.9
1914	133.4	123.0	122.4	130.4	149.2	160.8	162.8	168.6	169.6	161.0	148.6	144.0	131.6
1915	145.8	155.5	168.4	180.0	198.4	206.7	202.3	197.0	184.2	169.8	170.6	184.2	169.6
1916	194.7	217.0	241.6	249.6	252.2	253.4	259.6	283.4	299.7	288.4	274.8	287.2	233.8
1917	305.6	302.2	296.2	303.7	318.8	338.2	364.8	376.5	368.4	356.4	379.9	395.8	315.9
1918	381.0	357.4	337.0	333.9	318.9	318.8	338.0	355.0	375.4	416.7	492.4	529.0	374.2
1919	477.8	410.2	410.3	436.0	445 0	464.6	464.2	452.0	434.6	390.4	331.6	297.0	427.0
1920	285.0	259.9	208.4	170.2	160.0	153.4	146.5	134.2	135.7	145.8	154.0	163.4	217.6
1921	163.8	154.0	145.0	148.1	162.1	194.6	217.4	224.6	233.8	230.0	217.2	200.8	171.0
1922	189.1	199.4	211.0	217 8	229.9	245.4	261.6	279.5	273.1	248.4	228.8	210.4	209.5
1923	208.4	212.1	211.4	218.8	218.8	224.9	223.7	217.7	222.6	213.1	218.1	210.2	212.3
1924	201.2	210.8	222.7	235.8	271.8	275.3	267.8	244.7	251.8	246.8	227.6	229.5	220.7
1925	227.9	228.9	228.1	232.1	224.5	216.4	202.9	207.0	205.4	203.9	208.7	215.7	224.7
1926	211.3	197.5	195.5	196.4									

Division of Crop and Livestock Estimates. Mean of prices reported on 1st of month and 1st of succeeding month, September, 1909–December, 1923.

TABLE 97.—*Flaxseed: Estimated price per bushel, received by producers December 1, average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Wis	198	150	180	210	225	226	200	Nebr	201	150	190	210	225	230	185
Minn	209	151	218	213	233	230	197	Kans	190	135	186	215	215	200	200
Iowa	199	153	185	210	225	220	195	Mont	194	140	197	193	221	220	185
N. Dak	204	143	214	212	227	226	193								
S. Dak	199	139	201	208	223	225	190	U. S	204.2	145.1	211.5	210.7	227.4	226.5	194.1

Division of Crop and Livestock Estimates.

TABLE 98.—*Flaxseed No. 1: Average price per bushel at Minneapolis, 1909–1926*

Year beginning September	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909–1913	1.95	1.90	1.82	1.82	1.94	1.96	1.95	1.98	1.96	1.89	1.89	1.96	1.92
1914–1920	2.99	2.80	2.91	2.92	3.02	3.01	3.10	3.07	3.09	3.02	3.19	3.26	3.03
1921–1925	2.31	2.33	2.37	2.48	2.62	2.73	2.68	2.74	2.66	2.55	2.54	2.40	2.47
1909	1.41	1.57	1.75	1.93	2.18	2.18	2.25	2.38	2.22	2.04	2.34	2.47	2.06
1910	2.66	2.62	2.61	2.42	2.60	2.68	2.60	2.56	2.47	2.24	2.10	2.34	2.49
1911	2.47	2.35	2.04	2.06	2.15	2.06	2.06	2.15	2.23	2.25	1.97	1.86	2.14
1912	1.76	1.60	1.35	1.25	1.29	1.34	1.20	1.29	1.30	1.31	1.38	1.47	1.38
1913	1.45	1.38	1.35	1.44	1.49	1.53	1.58	1.54	1.56	1.59	1.68	1.64	1.52
1914	1.51	1.33	1.45	1.54	1.83	1.86	1.91	1.93	1.95	1.76	1.67	1.67	1.70
1915	1.70	1.86	1.99	2.07	2.31	2.32	2.27	2.13	1.96	1.80	1.96	2.15	2.04
1916	2.11	2.54	2.78	2.84	2.89	2.81	2.90	3.18	3.33	3.11	3.01	3.46	2.91
1917	3.38	3.16	3.29	3.40	3.60	3.74	4.08	4.09	3.93	3.86	4.40	4.39	3.78
1918	4.09	3.59	3.77	3.54	3.41	3.45	3.75	3.88	4.12	4.76	5.94	5.87	4.19
1919	4.92	4.32	4.83	4.99	5.12	5.09	5.02	4.68	4.53	[illegible]	3.48	3.28	4.52
1920	3.23	2.83	2.27	2.06	1.96	1.82	1.78	1.58	1.84	1.86	1.89	2.01	2.09
1921	2.03	1.81	1.81	1.89	2.13	2.46	2.57	2.70	2.80	2.50	2.59	2.29	2.19
1922	2.28	2.38	2.48	2.62	2.80	3.04	3.07	3.40	2.94	2.80	2.70	2.34	2.58
1923	2.38	2.48	2.42	2.46	2.50	2.58	2.49	2.47	2.46	2.44	2.47	2.44	2.44
1924	2.26	2.40	2.58	2.84	3.15	3.12	2.97	2.79	2.80	2.68	2.49	2.54	2.63
1925	2.59	2.58	2.56	2.61	2.50	2.43	2.32	2.34	2.30	2.33	2.44	2.38	2.52
1926	2.33	2.21	2.22	2.24	------	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. The figures shown for 1909–1920 are averages of daily closing prices compiled from Annual Reports of the Minneapolis Chamber of Commerce; 1921–1925 are average of daily prices weighted by car-lot sales, compiled from Minneapolis Daily Market Record. Data 1899–1908 available in 1924 Yearbook, p. 646, Table 125.

TABLE 99.—*Flaxseed: Monthly average cash prices per bushel of 56 pounds at Winnipeg, 1914–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1914–1920	2.60	2.65	2.82	2.90	2.86	2.78	2.96	2.86	2.67	2.61	2.70	2.63	2.76
1921–1925	2.05	2.19	2.16	2.16	2.18	2.14	2.14	2.12	2.09	2.10	2.08	2.07	2.12
1914	1.26	1.31	1.36	1.36	1.36	1.40	1.44	1.42	1.30	1.12	1.24	1.29	1.32
1915	1.57	1.61	1.70	1.78	1.78	1.56	1.48	1.42	1.44	1.63	1.80	1.84	1.63
1916	2.06	2.07	2.02	1.38	1.70	1.60	1.69	1.92	1.92	2.35	2.58	2.57	2.03
1917	2.60	2.60	2.60	2.90	3.10	2.86	2.76	2.34	3.12	3.05	3.13	3.05	2.84
1918	3.18	3.40	3.81	3.79	3.70	3.67	4.23	4.19	3.94	3.43	3.57	3.25	3.68
1919	3.05	3.07	3.46	3.65	3.94	4.59	5.83	5.64	4.74	4.04	4.52	4.64	4.35
1920	4.50	4.48	4.82	4.94	4.43	3.81	3.28	3.10	2.20	2.68	2.04	1.75	3.50
1921	1.65	1.60	1.54	1.33	1.51	1.61	1.67	1.80	1.80	1.63	1.63	1.60	1.61
1922	1.71	2.17	2.28	2.29	2.42	2.32	2.37	2.03	2.02	2.13	2.09	2.06	2.16
1923	2.15	2.31	2.39	2.80	2.43	2.30	2.18	2.05	2.04	2.08	2.04	1.95	2.23
1924	2.08	2.22	2.07	2.02	2.12	2.11	2.26	2.34	2.20	2.33	2.35	2.48	2.22
1925	2.68	2.63	2.50	2.35	2.44	2.37	2.22	2.40	2.37	2.33	2.29	2.26	2.40
1926	2.14	2.05	1.92	1.96	1.93	1.95	2.08	2.11	2.05	1.94	1.91	1.88	1.99

Division of Statistical and Historical Research.

Canada Year Book, except for periods September, 1917, to August, 1919, inclusive, and January, 1924, to date, which are from reports of the Grain Trade of Canada. Monthly averages of weekly range except for period September, 1917, to August, 1919, when daily quotations were averaged.

Conversion to United States currency beginning January, 1917, at rates of exchange as quoted by the Commercial and Financial Chronicle, and beginning January, 1920, at rates quoted by Federal Reserve Board.

TABLE 100.—*Linseed oil: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913 [1]		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Belgium	10, 233	26, 790	1, 196	18, 477	1, 184	19, 489	1, 657	27, 090
Netherlands	457	73, 634	498	116, 317	600	142, 549	163	146, 520
United Kingdom	58, 018	58, 013	9, 184	84, 379	5, 902	68, 477	38, 407	56, 786
PRINCIPAL IMPORTING COUNTRIES								
Argentina	886	[2] 2	555	973	730	1, 108	1, 015	503
Australia	12, 252		[3] 7, 574	[3] 30	[3] 5, 604	[3] 41	[4] 5, 828	[4] 42
Austria			6, 982	[4] 92	8, 355	[4] 110	7, 635	[4] 347
Austria-Hungary	16, 367	6, 542						
Brazil	8, 726		8, 058		8, 853		[4, 5] 7, 113	
British India	3, 430	1, 967	2, 001	748	2, 161	545	2, 139	842
Canada	2, 279		1, 968	59	964	98	341	66
Chile	2, 854	15	2, 249		2, 603			
Czechoslovakia			483	(6)	1, 015	[4] 298	2, 032	[4] 72
Denmark	(7)	(7)	359	1, 081	578	67	2, 110	112
Dutch East Indies	[8] 3, 199		3, 580		3, 597		[9] 3, 410	
Egypt	3, 647		3, 579	11	4, 122	3	4, 901	3
Finland	812		4, 438		4, 358		4, 490	
France	3, 382	10, 931	11, 225	5, 728	13, 731	5, 062	10, 055	3, 305
Germany	5, 231	4, 377	47, 691	673	68, 508	865	58, 779	4, 869
Greece	246		746	[4] 1	877			
Hungary			3, 128	133	3, 640	205	3, 757	53
Italy	1, 042	165	2, 357	239	4, 378	266	1, 139	460
New Zealand	4, 188		3, 406	1	3, 623	9	3, 673	7
Norway	1, 609	[10] 53	4, 347	8	3, 065	[4] 55	2, 328	[4] 6
Philippine Islands	809		874		839		748	
Sweden	933	5	57	287	368	81	[4] 387	937
Switzerland	7, 825	16	9, 574	2	12, 471	11	11, 047	5
Union of South Africa	3, 449		4, 459	[4] 31	4, 349	[4] 41	4, 122	[4] 8
United States	2, 605	4, 105	43, 097	3, 013	13, 247	2, 387	13, 007	2, 487
Yugoslavia	[2] 445		[4] 2, 041		[4] 1, 519		[4] 2, 743	[4] 27
Other countries	7, 117	1, 460	11, 420	1, 161	16, 677	748	16, 529	758
Total	162, 041	188, 075	197, 126	233, 444	197, 936	242, 515	210, 155	245, 305

Division of Statistical and Historical Research. Official sources except where otherwise noted. Conversions made on the basis of 7.5 pounds to the gallon.

[1] International Institute of Agriculture, Oleaginous Products and Vegetable Oils.
[2] Four-year average.
[3] Year beginning July 1.
[4] International Yearbook of Agricultural Statistics.
[5] Seven months.
[6] Less than 500 pounds.
[7] Not separately stated.
[8] Two-year average.
[9] Java and Madura only.
[10] Includes reexports.

TABLE 101.—*Linseed oil meal: Average price per ton at New York, 1910–1926*

Year beginning September	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1914–1920	51.77	51.09	51.77	52.76	54.00	52.25	51.46	49.48	47.53	48.05	50.87	54.19	51.27
1921–1925	46.20	45.02	------	------	49.63	48.40	46.64	45.10	44.40	43.71	44.03	44.73	------
1910	37.46	36.90	35.50	35.50	35.50	35.50	35.50	34.12	33.75	33.50	34.33	35.71	35.27
1911	40.00	40.75	40.12	39.00	39.65	40.17	39.75	38.80	38.10	37.30	36.57	35.50	38.81
1912	35.38	35.30	34.38	32.75	32.34	31.90	29.20	27.86	28.12	28.25	29.40	30.12	31.25
1913	32.50	32.00	31.40	31.25	31.25	31.35	31.25	31.50	31.50	32.27	32.80	34.60	31.97
1914	33.62	32.83	32.75	35.10	38.75	41.00	37.13	35.50	32.50	32.50	35.31	37.71	35.39
1915	39.70	38.75	38.50	40.50	40.60	39.50	36.03	32.86	31.50	32.12	33.00	37.00	36.72
1916	39.50	42.28	45.45	47.50	48.50	48.50	48.33	47.00	49.44	49.25	51.08	53.50	47.53
1917	53.00	54.00	54.42	57.00	58.15	58.50	58.50	57.00	52.50	50.00	52.80	54.00	54.99
1918	55.00	56.00	55.75	56.50	62.15	63.35	65.50	65.50	70.50	75.50	82.30	90.25	66.52
1919	81.58	73.80	78.75	80.75	81.50	71.75	70.40	62.50	60.00	60.00	60.00	60.00	70.09
1920	60.00	60.00	56.80	52.00	48.38	43.12	43.75	46.00	36.25	3[illegible].00	41.60	46.88	47.65
1921	46.30	40.00	40.75	48.00	51.00	51.62	55.00	49.50	47.62	49.20	46.88	45.50	47.61
1922	43.50	43.50	(1)	(1)	53.50	54.12	46.30	43.25	42.50	38.00	38.00	38.00	------
1923	45.00	45.62	43.88	45.00	43.75	42.00	42.00	40.50	40.00	39.90	43.75	45.00	43.03
1924	47.80	49.38	50.62	51.30	50.00	47.12	42.38	42.75	42.88	44.81	45.50	48.38	46.91
1925	48.38	46.60	50.00	51.00	49.88	47.12	47.50	49.50	49.00	46.62	46.00	46.75	48.20
1926	49.00	48.25	47.50	47.50	------	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. From Annual Statistical Review of New York Produce Exchange and the Oil, Paint, and Drug Reporter.

[1] Nominal.

RICE

TABLE 102.—*Rice, rough: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Farm value Dec. 1	Value per acre [1]	Domestic exports, fiscal year beginning July 1 [2]	Net imports, fiscal year beginning July 1 [2]
Average:	*Acres*	*Bush. of 45 lbs.*	*Bushels*	*Cents*	*Dollars*	*Dolls.*	*Bushels*	*Bushels*
1909–1913	716,000	33.2	23,770,000	81.5	19,361,000	27.05	5,398,105	7,785,400
1914–1920	981,000	38.0	37,265,000	152.7	56,892,000	58.01	14,183,306	6,233,312
1921–1925	922,000	38.7	35,708,000	116.4	41,551,000	45.07	18,908,292	1,558,361
1909	*610,000*	33.8	20,607,000	79.5	16,392,000	26.87	4,487,287	7,820,643
1910	723,000	33.9	24,510,000	67.8	16,624,000	22.99	5,134,355	7,292,960
1911	696,000	32.9	22,934,000	79.7	18,274,000	26.26	5,824,598	6,467,505
1912	723,000	34.7	25,054,000	93.5	23,423,000	32.40	5,672,996	7,539,206
1913	827,000	31.1	25,744,000	85.8	22,090,000	26.71	5,871,289	9,806,684
1914	694,000	34.1	23,649,000	92.4	21,849,000	31.48	7,334,389	7,848,181
1915	803,000	36.1	28,947,000	90.6	26,212,000	32.64	9,506,099	6,931,061
1916	869,000	47.0	40,861,000	88.9	36,311,000	41.78	12,315,486	6,180,934
1917	981,000	35.4	34,739,000	189.6	65,879,000	67.16	11,885,265	13,095,243
1918	1,119,000	34.5	38,606,000	191.8	74,042,000	66.17	12,892,196	5,309,014
1919	1,063,000	39.5	41,985,000	266.6	111,913,000	105.28	22,899,774	3,001,362
1920	1,336,000	39.0	52,066,000	119.1	62,036,000	46.43	22,449,930	1,267,391
1921	921,000	40.8	37,612,000	95.2	35,802,000	38.87	33,834,616	721,411
1922	1,055,000	39.2	41,405,000	93.1	38,562,000	36.55	21,583,817	1,168,077
1923	895,000	37.7	33,717,000	110.2	37,150,000	41.51	17,245,060	809,252
1924	850,000	38.2	32,498,000	138.5	45,009,000	52.95	12,141,853	1,332,315
1925	889,000	37.5	33,309,000	153.8	51,232,000	57.63	9,736,114	3,760,749
1926 [3]	1,018,000	40.3	41,006,000	109.7	44,988,000	44.19	------------	------------

Division of Crop and Livestock Estimates. Figures in italics are census returns.

[1] Based upon farm price Dec. 1.

[2] Commerce and Navigation of United States, 1909–1918, and the June issue of Monthly Summaries of Foreign Commerce, 1919–1926. Domestic exports here include also shipments from the United States to Porto Rico and Hawaii; net imports are total imports minus reexports. Bushels are computed from pounds as reported in original by assuming 1 bushel of rough rice to yield 27⅞ pounds of cleaned rice.

[3] Preliminary.

Table 103.—*Rice, rough: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Missouri		1	4	10		50	300	610
South Carolina	8	5	5	5	200	70	80	85
Georgia	3	3	3	3	68	51	51	60
Florida	2				46			
Mississippi	1	1	1	1	18	10	18	18
Arkansas	135	164	175	189	5, 332	6, 888	7, 525	10, 017
Louisiana	495	440	430	495	16, 582	15, 224	14, 319	16, 088
Texas	145	146	168	166	5, 800	5, 840	6, 216	6, 142
California	106	90	103	149	5, 671	4, 365	4, 800	7, 986
United States	895	850	889	1, 018	33, 717	32, 498	33, 309	41, 006

Division of Crop and Livestock Estimates.

[1] Preliminary.

Table 104.—*Rice, rough: Yield per acre, by States, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Bus.	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*
Mo.					50. 0	75. 0	61. 0
S. C.	21. 2	25. 0	26. 0	25. 0	14. 0	16. 0	17. 0
Ga.	21. 4	26. 0	24. 1	22. 7	17. 0	17. 0	20. 0
Fla.		22. 0	25. 0	23. 0			
Miss.	17. 0	20. 0	19. 0	18. 0	10. 0	18. 0	18. 0
Ark.	45. 2	53. 5	48. 0	39. 5	42. 0	43. 0	53. 0
La.	34. 7	36. 0	36. 0	33. 5	34. 6	33. 3	32. 5
Tex.	36. 9	36. 1	31. 2	40. 0	40. 0	37. 0	37. 0
Calif.	51. 5	54. 0	55. 0	53. 5	48. 5	46. 6	53. 6
U. S.	38. 7	40. 8	39. 2	37. 7	38. 2	37. 5	40. 3

Division of Crop and Livestock Estimates.

TABLE 105.—*Rice: Acreage, yield per acre, and production in specified countries, averages 1909–1913, 1921–1925, annual 1924–1926*

Country	Acreage					Yield per acre					Production, in terms of cleaned rice				
	Average, 1909–1913	Average, 1921–1925	1924	1925	1926 preliminary	Average, 1909–1913	Average, 1921–1925	1924	1925	1926 preliminary	Average, 1909–1913	Average, 1921–1925	1924	1925	1926 preliminary
NORTHERN HEMISPHERE	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
United States	716	922	850	889	1,018	922	1,076	1,062	1,041	1,119	660,272	991,894	902,722	925,250	1,139,056
Mexico	[1] 66	[2] 56	53	54	63	[1] 517	[2] 732	846	579		[1] 34,158	[2] 41,072	44,829	31,273	
Hawaii	[1] 9	[3] 6		6							[1] 25,820	[3] 18,254		18,247	
Central and South America and West Indies:															
Guatemala		6	5	2							[4] 2,208	2,735	2,039	1,022	
Salvador		[5] 13	12	13							[1] 8,928	[5] 17,400	13,600	25,000	
Costa Rica	[1] 7	[1] 19	19					280				[1] 5,327	5,327		
Colombia	[6] 15		42			[6] 1,163		477			[6] 17,452		20,049		
Ecuador												27,500			
British Guiana	36	40	29	29		1,496	1,312	2,245	2,244		53,865	52,467	56,130	51,614	
Dutch Guiana											2,254	13,657	17,334	13,506	
Porto Rico	[1] 16	[3] 12				[1] 269					[1] 4,298	[3] 3,308			
Trinidad and Tobago	[2] 12	[1] 8										[1] 3,460			
Europe:															
France	1	([7])									2,017	[1] 58			
Spain	94	116	116	120		3,188	3,238	3,467	3,470		299,703	375,599	402,207	416,383	421,861
Portugal	[6] 17	[5] 13				[6] 1,331					[6] 22,634	[5] 21,232	25,908	21,439	
Italy	358	316	340	356	360	1,806	2,316	2,365	2,153	2,608	646,465	731,900	804,135	873,130	939,000
Yugoslavia	[8] 5	4	4	3							[8] 2,586	2,874	2,714	1,675	
Bulgaria	7	10	12	13	13						8,612	13,699	13,356	16,516	17,155
Russia (northern Caucasia)	[4] 2										1,218				
French West Africa:															
French Guinea												978,126	1,088,691	1,122,713	
French Senegal		119	124	124			853	548	548			101,455	68,000	68,000	
Sudan		[1] 79					775					[1] 61,200			
Upper Volta		[5] 44					139					[5] 6,100	5,400	6,124	
Sierre Leone	[9] 250	390	400	400		[9] 830	798	932	933		[9] 207,405	311,053	372,900	373,283	

[1] One year only.
[2] Four-year average.
[3] Census 1919.
[4] Two-year average.
[5] Three-year average.
[6] Year 1915.
[7] Less than 500.
[8] Pre-war average.
[9] Year 1914.

TABLE 105.—*Rice: Acreage, yield per acre, and production in specified countries, averages 1909–1913, 1921–1925, annual 1924–1926*—Con.

Country	Acreage					Yield per acre					Production, in terms of cleaned rice				
	Average, 1909–1913	Average, 1921–1925	1924	1925	1926 preliminary	Average, 1909–1913	Average, 1921–1925	1924	1925	1926 preliminary	Average, 1909–1913	Average, 1921–1925	1924	1925	1926 preliminary
NORTHERN HEMISPHERE—continued	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Egypt	257	192	256	143	[10] 270	2,132	1,536	1,605	1,657		547,972	294,945	410,792	236,989	[11] (415,000)
Asia:															
Turkey [12]	[1] 153	66	44	87	133	[1] 1,117					[1] 170,952				
India	67,004	81,157	81,328	81,461	([13])	957	864	856	835		64,144,192	70,124,544	69,657,280	67,999,680	
Andaman and Nicobar		[2] 4	4	3								[2] 2,621	2,796		
British North Borneo	[9] 64	62	64	74		[9] 595	774	748	1,071		[9] 38,072	47,971	47,897	79,226	
Brunei		[5] 3	2	5								[5] 1,746	755	2,963	
French Establishments in India	40	45	43	46		657	636	658	594		26,268	28,600	28,305	27,323	
Russia (Transcaucasia and Turkestan)	572					584					334,061				
China												[1] 52,788,000	[14] 50,056,000		
Japanese Empire—															
Japan	7,300	7,705	7,701	7,729	7,731	2,163	2,350	2,332	2,427	2,259	15,787,276	18,107,381	17,960,400	18,755,882	17,464,310
Chosen (Korea)	2,905	3,823	3,862	3,885	3,891	1,133	1,192	1,075	1,195	1,246	3,292,776	4,555,614	4,152,923	4,641,051	4,849,869
Taiwan (Formosa)	1,193	1,283	1,310	1,361	1,400	1,184	1,362	1,457	1,488		1,412,504	1,747,312	1,908,999	2,024,699	2,055,474
Kwantung	1	[2] 3	6								1,074	[2] 3,220	4,645		
French Indo-China	[4] 8,550	12,010	11,762	12,533	[15] 12,760	[4] 858	641	668	626		[4] 7,332,350	7,693,195	7,858,942	7,841,250	[16] (7,950,000)
Siam	4,555	6,633	6,862	7,006		935	944	988	961		4,257,663	6,261,019	6,778,564	6,732,519	
Federated Malay States	[4] 124	[2] 202	178			[4] 637	[2] 594	702			[4] 79,015	[2] 119,900	125,026		
Unfederated Malay States		399	401				733	715				292,339	286,901		
Straits Settlements	93	[2] 72	72				[2] 1,089	1,187				[2] 78,407	85,454		
Philippine Islands	2,817	4,214	4,264	4,265		431	603	661	454		1,212,938	2,542,060	2,818,080	1,987,197	
Ceylon	695	799	800	803		587	579	617	645		407,784	462,827	493,443	517,833	
SOUTHERN HEMISPHERE															
Peru	[4] 131	[4] 87				[4] 639	[4] 1,051				[4] 83,700	[4] 91,464			
Brazil		[5] 931	1,344	1,325			[5] 1,169	822			[1] 89,798	[5] 1,088,448	1,105,021		
Paraguay	[9] 1	[5] 3									[9] 1,225	[5] 3,447			
Argentina	[4] 8	[5] 18	13				[4] 1,329				[4] 8,302	[5] 23,918	16,006		

Belgian Congo		[2] 25	33				[2] 196	198				[2] 4,911	6.532		
Mozambique		[5] 1										[5] 215	198		
Nyasaland											1,191	[9] 435	366		
Rhodesia (Southern)			(7)									[5] 28	39		
Madagascar	[5] 1,009	[2] 1,276	1,285	1,285	[7]	[5] 388	[2] 1,047	1,165	1,108		[5] 896,300	[2] 1,335,620	1,496,951	1,423,388	
Java and Madura:															
Irrigated	5,953	7,135	7,403	7,191	7,354	1,005	927	956	929	1,041	5,982,693	6,614,695	7,076,171	6,677,472	7,657,143
Nonirrigated	[17] 956	879	955	951	1,107	[17] 474	491	523	505	537	[17] 450,000	431,708	499,000	480,159	594,285
Total, Java and Madura	6,900	8,014	8,358	8,142	8,461	932	879	906	879	975	6,433,000	7,046,403	7,575,171	7,157,630	8,251,428
Australia	(7)	(7)									[4] 19	5			
Fiji Islands	[5] 12	[5] 11	10	10							[5] 23,377	[5] 6,157	4,567	2,797	
Total 9 countries reporting acreage and production all periods listed	28,186	34,275	34,451	35,051	35,904	1,282	1,202	1,207	1,212	1,200	36,121,227	41,182,343	41,587,440	42,472,397	43,081,292
Estimated world total exclusive of China [18]											109,000,000	126,000,000	128,000,000	126,000,000	

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture. Yield has not been calculated when total acreage is below 15,000 acres. Acreage and production figures in most cases are for crops harvested in the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere.

[1] One year only.
[2] Four-year average.
[4] Two-year average.
[5] Three-year average.
[7] Less than 500.
[9] Pre-war average.
[10] Total area estimated from increase in acreage under the summer or main crop which is 88 per cent. This is probably due to an increase in the authorized area.
[11] Rough estimate of total production obtained by multiplying estimated area by average yield for five years, 1921–1925.
[12] European Turkey included.
[13] Second estimate of area 1926 is 76,632,000 acres compared with 78,496,000, the revised second estimate for 1925 or a decrease of 2.4 per cent.
[14] Year 1923. Normal crop is estimated to be about 53,200,000,000 pounds according to the China Year Book.
[15] Total area estimated from that reported in Annam, Cochin China, Laos, and first crop in Tonkin, which aggregates 9,516,200 acres compared with 9,345,700 in 1925. The area under rice in these Provinces of Indo-China in 1925 was 74.6 per cent of the total area under rice in that country in 1925.
[16] Rough estimate of total production obtained by multiplying estimated acreage by yield per acre in Provinces reporting production so far for 1926, or 623 pounds.
[17] Rough estimate for nonirrigated rice.
[18] Unofficial estimates of the Chinese crop are as follows: 70,219,000,000 pounds in 1917; 52,788,000,000 in 1920; and 50,056,000,000 in '923.

Table 106.—*Rice, in terms of cleaned rice: World production, 1909–1926*

[Million pounds—i. e., 000,000 omitted]

Year	Production for countries reporting, all years [1]	Estimated world production, exclusive of China [2]	Production in chief producing countries [3]: India	Japan	Indo-China	Java and Madura [4]	Siam [5]	Chosen	Philippines	United States
1909	88,498	107,000	63,869	16,474	--------	5,723	3,734	2,343	1,164	572
1910	87,201	106,000	64,552	14,650	--------	5,738	3,466	3,269	1,267	681
1911	88,767	109,000	63,943	16,246	--------	6,170	4,533	3,634	717	637
1912	87,683	109,000	63,802	15,778	6,614	5,842	4,561	3,413	1,512	696
1913	89,486	113,000	64,555	15,789	8,051	6,440	4,994	3,804	1,404	715
1914	87,970	113,000	61,109	17,909	9,521	6,339	4,708	4,439	1,100	657
1915	99,926	124,000	73,315	17,569	7,921	6,451	4,786	4,036	1,289	804
1916	105,798	129,000	78,521	18,363	6,733	6,409	5,011	4,377	1,745	1,135
1917	107,084	132,000	80,638	17,142	6,313	6,742	5,133	4,261	2,213	965
1918	80,574	105,000	54,526	17,185	6,302	6,409	4,642	4,765	2,089	1,072
1919	100,916	123,000	71,743	19,106	6,532	7,435	3,114	3,974	2,247	1,166
1920	90,610	117,000	61,963	19,858	6,284	6,250	5,868	4,639	2,565	1,446
1921	99,811	127,000	74,278	17,336	7,931	5,624	5,806	4,500	2,681	1,045
1922	104,185	133,000	75,524	19,067	7,893	6,864	5,954	4,717	2,703	1,150
1923	89,992	118,000	63,164	17,418	7,206	6,832	6,034	4,767	2,571	937
1924	97,827	128,000	69,657	17,960	7,859	7,076	6,779	4,153	2,818	903
1925	96,761	126,000	68,000	18,756	7,841	6,677	6,733	4,641	1,937	925
1926 (prelim)	----------	----------	--------	17,464	[6] 7,950	7,657	--------	4,850	--------	1,139

Division of Statistical and Historical Research. The figures for each year include the crop harvested in the Northern Hemisphere within the calendar year and the following harvest in the Southern Hemisphere. Estimates of world rice production for the period 1900–1909 appear in Agriculture Yearbook, 1924, p. 653.

[1] Countries reporting from 1909 to date include India, Japan, Java and Madura, Formosa, Italy, Spain, and Dutch Guiana.

[2] Revised figures based on additional information since the publication of the 1924 Yearbook of the United States Department of Agriculture due principally to changes in the figures for Java and Madura and Siam.

[3] China would rank among the chief producing countries, but owing to lack of official statistics has been omitted.

[4] Irrigated rice. The changes in the figures for Java and Madura from those previously reported are based on official information recently received as to the percentage of cleaned rice obtained from paddy and rough rice.

[5] Estimated figures obtained by multiplying acreage under rice as classified for revenue purposes up to 1912 and acreage as reported by the Department of Land and Agriculture from 1912 on by an average yield for the years 1920–1923 for which years official estimates have been published of areas, yield, and total production.

[6] Rough preliminary estimate.

Table 107.—*Rice, rough: Receipts at New Orleans, 1909–1925*

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
	Sacks	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*
1909	283,974	322,339	217,189	117,975	77,507	151,750	85,257	62,776	34,947	81,723	65,693	8,817	1,509,347
1910	178,691	320,845	169,886	110,298	116,610	109,123	57,123	51,196	57,742	64,059	23,499	30,689	1,289,761
1911	114,011	233,663	233,217	191,919	81,499	135,770	107,650	28,718	5,885	3,868	510	19,968	1,156,678
1912	112,153	185,820	189,805	236,008	190,303	79,293	16,056	11,309	2,587	6,703	24,947	20,507	1,074,491
1913	207,267	156,916	116,727	196,066	146,384	149,057	105,964	45,068	49,118	26,253	10,664	7,546	1,217,030
1914	195,206	224,773	152,665	214,241	194,462	62,061	86,702	38,750	4,684	3,575	10,122	8,496	1,195,737
1915	167,961	297,334	199,521	252,763	87,759	125,526	73,025	84,838	47,153	11,422	1,446	973	1,349,721
1916	221,968	288,260	253,145	233,276	113,264	30,991	93,454	146,502	64,833	11,966	10,602	9,987	1,478,248
1917	160,843	255,102	249,538	178,079	59,645	34,144	58,814	132,926	56,054	30,350	1,882	4,524	1,221,901
1918	127,893	345,669	164,037	99,732	76,789	92,246	89,522	51,048	54,581	47,964	23,373	16,724	1,189,578
1919	115,840	268,561	207,085	111,712	153,265	129,527	60,616	46,042	52,098	44,786	54,554	32,960	1,277,046
1920	172,155	247,671	281,608	209,144	131,886	113,196	50,944	142,962	126,032	227,415	119,643	86,771	1,909,427
1921	221,559	173,694	143,017	83,941	193,487	104,856	101,621	232,778	85,551	24,236	20,966	16,378	1,402,084
1922	95,959	178,308	253,557	194,110	136,372	86,853	51,264	17,365	96,324	19,721	39,402	43,424	1,212,679
1923	43,257	98,896	119,755	117,374	108,164	86,844	31,873	38,852	9,559	6,145	674	742	662,135
1924	83,872	174,271	193,047	165,857	119,084	79,519	74,286	13,145	14,323	6,338	9,162	6,408	939,812
1925	129,073	128,641	87,133	78,948	141,345	-------	-------	-------	-------	-------	-------	------	---------

Division of Statistical and Historical Research. Compiled from annual reports of the New Orleans Board of Trade.

Data for 1891–1908 available in 1924 Yearbook, p. 654, Table 139.

A sack of rough rice contains 162 pounds.

TABLE 108.—*Rice, rough: Stocks at New Orleans as reported at the end of each month, 1909–1925*

Year beginning August	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31	Jan. 31	Feb. 28 or 29	Mar. 31	Apr. 30	May 31	June 30	July 31
	Sacks	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*	*Sacks*
1909	187,548	223,616	250,743	228,862	244,030	276,499	236,948	184,915	170,713	154,765	150,993	120,129
1910	168,849	256,155	249,329	206,309	222,167	188,907	185,843	139,147	121,652	100,316	67,891	76,114
1911	42,523	104,491	102,064	121,966	117,705	113,245	137,887	79,367	74,114	77,982	67,568	47,564
1912	55,951	49,215	81,190	72,760	113,776	116,737	79,015	46,160	27,555	16,690	14,015	8,145
1913	62,952	30,342	21,008	33,491	70,882	57,008	44,485	32,582	14,907	17,198	14,676	6,673
1914	21,202	62,574	79,746	97,410	128,376	112,480	118,566	102,266	91,882	80,527	37,990	14,801
1915	72,546	75,416	73,052	131,181	109,918	137,555	130,693	107,135	75,338	39,642	26,457	14,091
1916	69,303	89,995	81,465	101,734	78,093	62,228	62,966	62,880	27,776	8,887	4,419	1,162
1917	50,517	69,592	58,967	67,802	58,607	75,695	63,233	58,809	19,344	5,062	3,693	368
1918	28,751	128,751	118,040	117,138	52,614	24,404	43,607	43,789	41,869	50,607	9,117	13,606
1919	38,307	66,400	53,647	39,733	51,586	41,709	46,029	37,192	28,037	22,266	15,869	6,428
1920	70,906	125,650	145,054	99,932	58,082	36,712	30,466	46,089	49,172	[illegible]0,652	40,758	24,158
1921	38,499	40,419	37,465	35,825	69,664	68,660	66,778	63,200	76,0[illegible]	67,151	48,265	21,184
1922	31,218	37,942	35,848	56,667	43,668	56,926	64,249	54,061	51,526	34,074	37,879	41,967
1923	41,967	60,013	40,686	18,446	26,445	34,280	48,031	34,897	46,920	36,241	35,149	34,188
1924	91,065	34,244	41,802	53,854	85,701	60,219	70,182	38,260	24,966	22,956	19,179	3,846
1925	23,636	20,511	16,528	26,923	39,734	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from annual reports of the New Orleans Board of Trade.

Data for 1905–1908 available in 1924 Yearbook, p. 654, Table 140.

A sack of rough rice contains 162 pounds.

TABLE 109.—*Rice, clean: Stocks at New Orleans as reported at the end of each month, 1909–1925*

Year beginning August	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31	Jan. 31	Feb 28 or 29	Mar. 31	Apr. 30	May 31	June 30	July 31
	Pockets	*Pockets*	*Pockets*	*Pockets*	*Pockets*	*Pockets*	*Pockets*	*Pockets*	*Pockets*	*Pockets*	*Pockets*	*Pockets*
1909	76,132	94,008	125,794	101,543	111,286	112,279	120,021	92,395	65,504	111,042	109,595	139,959
1910	122,747	92,394	94,792	107,576	106,429	104,536	97,634	80,190	65,679	83,126	76,295	60,258
1911	76,236	59,552	95,387	142,990	172,236	206,126	240,708	273,925	257,546	205,144	161,738	202,916
1912	161,317	123,701	179,323	173,897	197,744	219,185	225,157	191,090	159,795	145,754	93,363	65,289
1913	73,386	69,125	38,589	73,403	107,334	118,686	136,081	104,240	113,723	117,070	130,651	88,135
1914	55,858	78,427	70,668	93,456	129,561	164,413	224,043	205,858	170,745	159,009	140,687	124,779
1915	62,172	77,563	84,685	126,921	183,242	219,332	252,751	257,194	268,454	243,710	241,344	202,906
1916	143,196	117,844	157,769	243,810	252,161	157,092	123,371	199,188	258,342	205,059	154,870	126,552
1917	109,947	96,790	143,409	227,715	270,364	237,150	147,517	126,814	106,975	72,192	27,618	3,913
1918	27,750	67,082	76,091	79,973	107,798	117,467	185,070	206,819	199,396	136,995	184,242	111,459
1919	85,554	152,194	243,152	242,850	280,245	363,442	421,258	399,979	257,079	248,667	201,019	166,394
1920	172,419	174,156	175,928	277,228	400,806	359,321	201,871	158,452	142,796	180,450	179,086	86,504
1921	114,635	128,099	135,454	114,594	144,587	177,698	180,096	294,626	315,960	244,808	308,557	238,899
1922	123,463	91,028	97,561	124,710	193,886	276,407	172,764	152,171	151,443	158,965	189,106	130,240
1923	91,843	73,990	95,516	120,592	167,105	187,581	177,306	135,323	139,330	116,136	94,993	70,836
1924	86,848	138,446	171,893	183,984	254,731	242,992	272,666	254,347	214,907	133,523	116,281	62,345
1925	86,641	128,788	98,860	115,322	151,720	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from annual reports of the New Orleans Board of Trade.

Data for 1905–1908 available in 1924 Yearbook, p. 655, Table 141.

A pocket of cleaned rice contains 100 pounds.

TABLE 110.—*Rice: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Brazil	24,753	[1] 102	5	75,293	43,118	14,439	163,520	743
British India	278,272	5,337,516	349,213	4,554,264	391,028	5,120,288	[2] 181,167	[2] 5,539,503
French Indo-China	41	2,288,040	64	2,820,653	[3] 89	[3] 1,969,316	[3] 309	[3] 2,369,372
Italy	4,415	142,239	2,558	190,413	4,447	378,387	536	353,582
Madagascar	[3] 153	[3] 13,985	1	114,432	[3] 8	211,709	[3] 5	93,284
Siam [4]		1,928,507	4	2,894,440	1	2,496,837	3	2,975,131
Spain	5,467	18,063	18	149,446	31	115,847	628	99,857
United States	209,814	16,215	48,520	348,839	40,737	154,509	68,466	66,700
PRINCIPAL IMPORTING COUNTRIES								
Argentina	93,084	5,853	103,161	234	97,879	972	149,216	619
Austria			47,898	627	50,572	[3] 100	58,063	[3] 237
Austria-Hungary	183,411	461						
Belgium	180,830	99,948	80,461	1,549	81,809	1,534	89,359	3,193
British Malaya	[3] 1,999,672	[3] 1,290,475	1,268,645	455,833	1,308,298	420,458	1,465,495	547,352
Canada	32,109	2,354	53,027	2,278	37,254	3,115	45,380	1,593
Ceylon	821,654		881,441	5	876,700	46	968,916	33
China	704,992		1,846,499	5,193	1,759,741	5,591	1,684,617	4,701
Cuba	262,207		442,984		444,707			
Czechoslovakia			92,279	37	113,788	71	111,335	232
Dutch East Indies	1,178,111	132,400	920,919	64,890	995,200	88,794	[5] 557,352	[5] 62,488
Egypt	98,690	53,700	113,454	23,730	39,985	72,739	97,915	62,124
France	517,861	79,087	646,721	77,751	431,454	66,552	501,126	93,904
Germany	913,772	396,628	346,775	4,873	912,869	462,298	1,175,269	448,534
Hongkong			2,628,404	2,285,810	2,187,930	1,760,410	[6] 1,429,037	[6] 1,174,680
Hungary			15,605	289	43,549	296	31,850	922
Japan	655,676	61,936	589,851	10,447	1,089,290	8,182	1,713,523	28,995
Mauritius	132,543	[7] 1,446	138,144		97,728		[3] 135,188	
Netherlands	778,682	476,276	186,868	50,771	251,901	149,101	295,714	233,890
Philippine Islands	412,781	[8] 4	146,494	1,390	333,134	479	223,103	634
Russia	250,461	5,746	[3] 14,800		[3] 124,262	[3] 2,600	194,537	[3] 58
United Kingdom	768,853	90,564	313,386	22,943	319,524	22,425	294,020	18,953
Other countries	931,799	284,285	1,484,043	178,533	1,564,763	241,563	1,508,615	54,410
Total	11,440,103	12,734,830	12,762,248	14,334,963	13,641,856	13,768,667	13,144,264	14,235,724

Division of Statistical and Historical Research. Official sources except where otherwise noted.

Mostly cleaned rice. Under rice is included paddy, unhulled, rough, cleaned, polished, broken, and cargo rice, in addition to rice flour and meal. Rice bran is not included. Rough rice, or paddy, where specifically reported, has been reduced to terms of cleaned rice at the ratio of 162 pounds of rough or unhulled to 100 pounds of cleaned. "Rice, other than whole or cleaned rice," in the returns of the United Kingdom is not considered paddy, since the chief sources of supply indicate that it is practically all hulled rice. Cargo rice, a mixture of hulled and unhulled, is included without being reduced to terms of cleaned. Broken rice and rice flour and meal are taken without being reduced to terms of whole cleaned rice.

[1] Three-year average.
[2] Sea trade only.
[3] International Yearbook of Agricultural Statistics.
[4] Fiscal year Apr. 1–Mar. 31.
[5] Java and Madura only.
[6] Six months.
[7] Two-year average.
[8] One year only.

Table 111.—*Rice, rough: Estimated price per bushel, received by producers, December 1, average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
S. C.	119	97	115	120	140	125	120	La.	114	86	89	107	136	153	105
Ga.	125	92	117	132	140	145	110	Tex.	116	101	90	115	125	149	110
Fla.	130	97	130	135	140	150		Calif.	135	115	110	112	166	170	131
Miss.	118	118	110	115	136	110	120								
Ark.	116	92	88	112	138	150	100	U. S.	118.2	95.2	93.1	110.2	138.5	153.8	109.7

Division of Crop and Livestock Estimates.

Table 112.—*Rice, rough: Wholesale price per 162 pounds at New Orleans, 1909–1925*

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909	3.50	2.98	2.80	2.75	2.62	3.05	2.75	2.50	2.90	2.86	2.55	3.90	2.93
1910	2.80	2.28	2.28	2.36	2.43	2.50	2.30	2.46	2.16	2.35	2.25	2.75	2.41
1911	2.82	2.50	2.68	2.78	2.66	2.92	3.30	3.52	3.92	3.82	3.55	4.28	3.23
1912	3.58	3.38	2.66	3.20	3.38	3.53	3.59	3.50	2.95	3.62	3.25	3.42	3.34
1913	3.75	3.40	3.16	4.00	2.75	3.10	2.70	2.20	2.62	3.12	3.08	3.38	3.10
1914	4.32	3.90	2.65	2.75	3.38	3.18	3.60	3.68	3.75	3.56	3.55	3.38	3.48
1915	3.20	2.86	2.66	3.13	2.82	2.78	3.35	3.56	3.62	2.73		3.10	
1916	3.91	3.06	3.18	3.44	3.30	3.32	3.53	3.72	5.60	6.33	5.50	6.40	4.22
1917	6.62	6.50	6.00	6.88	7.10	7.25	7.63	8.31	7.70	8.53	7.88	7.12	7.29
1918	7.20	7.00	6.25	6.12	6.25	5.88				7.38		9.88	
1919	13.00	9.50	8.38	8.48	8.38	10.51			9.62	8.88	9.88		
1920	6.38	5.88	4.75	4.75			2.90	3.02		3.08	2.88	2.78	
1921	3.52	3.62	3.58	3.24		4.11	3.58	4.01	3.35	3.22	3.65	4.01	
1922	3.89	3.00	3.11	4.00	3.58	3.57	3.41	4.03		3.25	3.98		
1923	4.44	3.96	3.88	4.18	4.28	4.02	4.03	4.61	4.84	4.25			
1924	4.78	4.22	4.47	5.02	6.12	5.80			5.54	5.01	5.95	5.95	
1925	5.54	4.53	4.50	4.72	5.32								

Division of Statistical and Historical Research.
Compiled from annual reports of the New Orleans Board of Trade, average of monthly range.
Data for 1899–1908 available in 1924 Yearbook, p. 657, Table 144.

Table 113.—*Rice: Wholesale price per pound, 1909–1926*

NEW YORK (CLEANED, DOMESTIC, FANCY HEAD)

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1909–1913	4.9	4.8	4.8	4.6	4.6	4.7	4.7	4.6	4.5	4.6	4.6	4.6	4.7
1914–1920	8.9	8.7	8.4	8.1	8.3	8.2	8.1	8.2	8.4	8.7	8.9	9.1	8.5
1921–1925	7.6	7.6	7.5	7.5	7.6	7.7	7.8	7.8	7.7	7.8	7.9	7.9	7.7
1909	5.9	5.2	5.1	4.9	4.8	5.0	4.8	4.6	4.1	4.4	4.4	4.4	4.8
1910	4.4	4.6	4.4	4.1	4.1	4.2	4.0	3.9	3.8	3.8	3.7	3.8	4.1
1911	3.9	4.2	4.3	4.2	4.2	4.4	4.7	4.9	4.9	5.1	5.1	5.1	4.6
1912	5.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	5.0	4.9
1913	5.1	5.1	5.1	5.1	5.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	5.0
1914	5.3	5.7	5.6	5.6	5.4	5.2	5.4	5.4	5.4	5.4	5.4	5.4	5.4
1915	5.2	4.9	4.9	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
1916	5.2	5.2	5.2	5.2	5.4	5.4	5.4	5.6	7.1	8.8	8.6	8.4	6.3
1917	7.9	7.8	8.2	9.0	8.9	8.9	8.9	9.4	9.6	9.9	10.0	10.1	9.0
1918	10.1	10.1	10.2	10.5	10.5	10.4	10.4	10.4	10.4	10.7	11.7	13.7	10.8
1919	14.3	14.1	13.6	13.8	14.2	14.8	14.8	14.8	14.8	14.8	14.8	14.4	14.4
1920	14.0	13.2	11.1	7.4	8.5	7.5	6.9	6.9	6.5	6.1	6.5	6.5	8.4
1921	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.1	7.5	7.5	7.1
1922	7.5	7.5	7.6	7.4	7.4	7.8	7.8	7.7	7.6	7.9	7.9	7.9	7.7
1923	7.9	7.7	7.6	7.6	7.6	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
1924	7.8	7.7	7.5	7.6	7.8	7.8	8.1	8.1	8.1	8.1	8.1	8.1	7.9
1925	8.1	7.9	7.9	7.9	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.1
1926	8.2	8.2	8.2	8.2	8.2								

TABLE 113.—*Rice: Wholesale price per pound, 1909–1926*—Continued

NEW ORLEANS (HONDURAS, CLEAN, FANCY)

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1909–1913	4.0	3.7	3.6	3.5	3.6	3.7	3.7	3.6	3.5	3.8	3.7	4.0	3.7
1914–1920	6.7	6.7	6.4	6.3	6.4	6.2	6.3	6.5	6.7	6.7	7.2	7.3	6.6
1921–1925	6.5	6.4	6.3	6.4	6.7	6.8	6.8	6.7	6.8	6.8	6.9	6.9	6.7
1909	4.1	3.6	3.8	3.7	3.7	3.8	3.8	3.4	3.2	3.6	3.5	3.7	3.7
1910	3.8	3.6	3.4	3.1	3.2	2.9	3.1	2.9	3.0	2.9	2.9	3.6	3.2
1911	3.6	3.5	3.3	3.4	3.4	3.8	3.9	4.0	3.9	4.6	4.2	4.6	3.8
1912	4.1	4.1	3.5	3.8	4.1	4.1	4.0	3.9	4.0	4.1	4.1	4.4	4.0
1913	4.4	3.8	3.8	3.6	3.7	3.9	3.8	3.7	3.6	3.9	3.8	3.7	3.8
1914	4.1	4.2	3.6	3.4	3.6	3.9	4.1	4.1	4.0	4.1	4.2	4.2	4.0
1915	3.6	3.3	3.8	3.8	3.8	3.5	3.6	3.9	3.8	4.0	4.2	3.9	3.8
1916	3.8	3.5	3.8	3.9	3.9	3.9	3.9	4.1	5.2	5.9	6.3	6.3	4.5
1917	6.1	6.4	6.7	6.6	6.8	6.8	7.0	7.6	8.2	8.3	8.3	8.4	7.3
1918	7.6	7.6	7.5	7.3	7.5	7.8	7.7	8.0	7.9	7.0	9.2	10.1	7.9
1919	10.9	12.2	11.8	11.9	12.3	12.7	12.8	12.5	12.3	12.2	12.3	12.5	12.2
1920	10.6	9.6	7.9	6.9	6.6	4.6	4.7	5.4	5.3	5.5	5.8	5.0	6.5
1921	5.7	5.4	5.3	5.4	5.7	5.7	5.7	5.9	6.4	6.4	6.4	6.4	5.9
1922	6.6	6.6	6.5	6.5	6.5	6.6	6.6	6.3	6.4	6.4	6.5	6.5	6.5
1923	6.5	6.4	6.3	6.3	6.4	6.4	6.5	6.3	6.4	6.5	6.6	6.6	6.4
1924	6.6	6.6	6.4	6.5	6.9	6.9	6.9	6.9	6.9	7.2	7.4	7.6	6.9
1925	7.3	7.1	7.1	7.5	7.9	8.2	8.2	8.0	7.9	7.6	7.5	7.5	7.6
1926	7.6	7.6	(1)	(1)	(1)	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from the New York Journal of Commerce and New Orleans Times-Picayune, averages of daily range.

[1] Not quoted.

BUCKWHEAT

TABLE 114.—*Buckwheat: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage	Average yield per acre	Production	Price per bushel received by producers, Dec. 1	Farm value Dec. 1	Value per acre [1]	Domestic exports, fiscal year beginning July 1 [2]
Average:	*1,000 acres*	*Bushels of 48 pounds*	*1,000 bushels*	*Cents*	*1,000 dollars*	*Dollars*	*Bushels*
1909–1913	843	20.4	17,242	69.8	12,033	14.27	32,099
1914–1920	820	18.1	14,867	124.5	18,507	22.57	279,765
1921–1925	735	19.1	14,017	90.7	12,718	17.30	201,226
1909	*878*	20.5	17,983	70.2	12,628	14.38	158,160
1910	860	20.5	17,598	66.1	11,636	13.53	223
1911	833	21.1	17,549	72.6	12,735	15.29	180
1912	841	22.9	19,249	66.1	12,720	15.12	1,347
1913	805	17.2	13,833	75.5	10,445	12.98	586
1914	792	21.3	16,881	76.4	12,892	16.28	413,643
1915	769	19.6	15,056	78.7	11,843	15.40	515,304
1916	828	14.1	11,662	112.7	13,147	15.88	260,102
1917	924	17.3	16,022	160.0	25,631	27.74	5,567
1918	1,027	16.5	16,905	166.5	28,142	27.40	119,516
1919	700	20.6	14,399	146.1	21,032	30.05	244,785
1920	701	18.7	13,142	128.3	16,863	24.06	399,437
1921	680	20.9	14,207	81.2	11,540	16.97	484,763
1922	764	19.1	14,564	88.5	12,889	16.87	171,535
1923	739	18.9	13,965	93.3	13,029	17.63	92,587
1924	745	17.9	13,357	102.6	13,708	18.40	190,901
1925	747	18.7	13,994	88.8	12,423	16.63	66,345
1926 [3]	707	18.3	12,922	88.3	11,408	16.14	----------

Division of Crop and Livestock Estimates. Figures in italics are census returns.

[1] Based on farm price Dec. 1.

[2] Compiled from Commerce and Navigation of United States, 1909–1918, and June issue of Monthly Summary of Foreign Commerce, 1919–1926, including buckwheat flour since Jan. 1, 1922.

[3] Preliminary.

TABLE 115.—*Buckwheat: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Maine	10	13	14	15	230	312	364	345
New Hampshire	1				22			
Vermont	4	2	3	3	72	44	66	69
Massachusetts	1				20			
Connecticut	2				32			
New York	214	222	239	203	4,066	4,662	4,541	3,837
New Jersey	10	3	3	2	210	57	63	36
Pennsylvania	227	215	194	190	4,880	4,085	4,462	3,610
Ohio	23	34	24	22	460	544	473	385
Indiana	6	16	20	20	102	[illegible]	264	320
Illinois	6	6	5	5	90	84	70	65
Michigan	53	50	52	50	753	700	712	765
Wisconsin	28	23	29	23	392	299	464	345
Minnesota	49	57	61	66	637	684	854	1,122
Iowa	5	6	5	5	75	90	88	90
Missouri	1	1	1	1	13	13	14	15
North Dakota		8	6	9		64	72	135
South Dakota	9	10	11	9	126	148	132	126
Nebraska	1	1	1	1	18	15	14	11
Delaware	8	3	3	2	144	50	48	32
Maryland	9	7	7	8	199	126	168	162
Virginia	18	17	15	16	347	294	240	352
West Virginia	33	31	34	36	660	527	612	684
North Carolina	9	10	10	10	198	180	140	220
Kentucky	9	7	7	8	162	98	88	136
Tennessee	3	3	3	3	57	57	45	60
United States	739	745	747	707	13,965	13,357	13,994	12,922

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 116.—*Buckwheat: Yield per acre, by States, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926 [1]	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926 [1]
	Bus.	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*		*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*
Me	25.4	27.0	27.0	23.0	24.0	26.0	23.0	Iowa	15.3	15.0	14.0	15.0	15.0	17.5	18.0
N. H		21.0	25.0	22.0				Mo	13.4	14.0	13.0	13.0	13.0	14.0	15.0
Vt	21.6	22.0	24.0	18.0	22.0	22.0	23.0	N. Dak					8.0	12.0	15.0
Mass		18.0	21.0	20.0				S. Dak	12.6	14.0	8.0	14.0	14.8	12.0	14.0
Conn		17.5	18.0	16.0				Nebr	15.8	16.0	16.0	18.0	15.0	14.0	11.0
N. Y	20.3	21.5	21.0	19.0	21.0	19.0	18.9	Del	16.8	14.0	19.1	18.0	16.8	16.0	16.0
N. J	20.8	21.0	22.0	21.0	19.0	21.0	18.0	Md	20.7	19.0	20.6	22.1	18.0	24.0	20.2
Pa	21.5	23.0	21.0	21.5	19.0	23.0	19.0	Va	18.6	21.0	19.5	19.3	17.3	16.0	22.0
Ohio	20.1	25.0	20.0	20.0	16.0	19.7	17.5	W. Va	19.6	22.0	21.0	20.0	17.0	18.0	19.0
Ind	15.6	19.0	15.0	17.0	14.0	13.2	16.0	N. C	18.2	17.0	20.0	22.0	18.0	14.0	22.0
Ill	14.9	17.4	14.0	15.0	14.0	14.0	13.0	Ky	16.1	20.0	16.0	18.0	14.0	12.5	17.0
Mich	14.4	16.0	14.0	14.2	14.0	13.7	15.3	Tenn	17.1	18.0	14.5	19.0	19.0	15.0	20.0
Wis	14.5	14.9	14.4	14.0	13.0	16.0	15.0								
Minn	13.8	16.0	14.0	13.0	12.0	14.0	17.0	U. S	19.1	20.9	19.1	18.9	17.9	18.7	18.3

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 117.—*Buckwheat: Estimated price per bushel, received by producers, United States, 1909–1926*

Year beginning September	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Weighted average
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Average:													
1909–1913	73.0	71.1	70.2	70.3	70.8	70.9	71.4	72.6	74.4	77.3	78.3	76.1	72.0
1914–1920	131.2	126.2	124.1	124.8	125.1	125.3	126.5	129.8	138.5	148.9	150.1	142.8	129.6
1921–1925	102.4	93.2	90.8	91.7	91.7	92.0	94.1	93.6	97.8	100.2	102.1	103.6	94.3
1909	76.0	73.3	70.8	70.0	71.0	71.3	72.0	72.2	72.4	75.8	76.4	73.7	72.1
1910	72.0	68.6	66.0	66.0	65.1	64.2	64.7	65.6	68.0	71.2	74.2	75.0	67.5
1911	71.8	71.3	72.8	73.2	73.6	75.2	76.9	78.4	82.4	85.5	84.9	80.1	75.4
1912	73.2	67.6	65.8	66.4	68.1	68.2	67.6	69.8	71.1	71.8	72.6	71.2	68.3
1913	72.0	74.8	75.5	76.0	76.1	75.4	76.0	77.1	78.2	82.2	83.4	80.5	76.6
1914	79.2	78.4	77.2	77.2	80.8	84.6	85.4	85.0	85.8	89.5	90.6	85.3	81.1
1915	77.6	76.1	78.6	80.1	81.1	82.0	83.2	84.0	86.0	90.0	91.0	87.7	81.5
1916	88.4	96.6	107.8	115.0	115.9	119.7	126.6	139.4	167.2	196.4	199.2	176.8	126.5
1917	159.4	154.3	157.1	161.4	162.3	165.0	169.2	173.0	183.5	195.9	196.8	191.5	167.1
1918	185.2	176.5	169.8	164.7	160.5	153.2	149.0	148.4	156.4	163.2	163.4	162.8	164.7
1919	160.9	156.5	148.6	148.4	152.8	155.3	159.4	166.0	174.5	191.4	192.0	178.8	159.2
1920	167.8	145.2	129.6	126.8	122.0	117.5	112.8	112.6	116.0	115.7	117.5	117.0	126.8
1921	110.2	95.0	82.6	82.4	84.4	85.6	89.2	93.0	95.4	100.0	99.2	91.0	89.1
1922	85.2	82.2	84.4	89.0	88.5	88.6	92.6	95.0	98.4	102.3	101.4	99.4	89.9
1923	96.6	94.2	93.4	94.7	92.7	92.5	94.7	93.6	97.0	96.5	104.5	123.9	96.3
1924	118.8	107.1	106.8	104.6	107.0	112.2	112.4	104.1	113.3	112.3	115.7	110.0	108.6
1925	101.2	87.6	86.7	87.9	85.7	80.9	81.7	82.5	85.0	90.1	89.9	93.7	87.5
1926	90.4	86.5	83.6	83.5	------	------	------	------	------	------	------	------	------

Division of Crop and Livestock estimates. Mean of prices reported on 1st of month and 1st of succeeding month, September, 1909–December, 1923.

TABLE 118.—*Buckwheat: Estimated price per bushel, received by producers, December 1, average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Me.	100	100	110	95	95	100	83	Iowa	98	80	125	94	103	90	82
N. H.	103	88	125	100	110	90	95	Mo.	118	150	125	118	105	90	85
Vt.	95	90	92	100	105	90	85	S. Dak.	83	80	70	86	107	70	80
Mass.	123	125	138	115	125	110	115	Nebr.	90	80	85	85	100	100	90
Conn.	123	139	140	110	109	115	115	Del.	88	75	80	91	102	92	90
N. Y.	93	83	100	96	101	86	89	Md.	96	85	86	100	110	100	100
N. J.	105	100	115	95	117	100	100	Va.	95	82	82	95	106	110	95
Pa.	88	75	80	91	103	91	89	W. Va.	95	82	85	96	112	100	100
Ohio	94	105	80	94	103	86	95	N. C.	104	85	97	108	119	110	100
Ind.	97	100	100	95	103	85	95	Ky.	102	100	90	100	119	100	84
								Tenn.	105	95	80	109	125	115	110
Ill.	103	110	85	101	120	100	92								
Mich.	86	78	80	84	96	90	80	U. S.	90.9	81.2	88.5	93.3	102.6	88.8	88.3
Wis.	87	75	87	89	103	79	87								
Minn.	83	70	80	90	102	75	75								

Division of Crop and Livestock Estimates.

SORGHUMS

TABLE 119.—*Sorghums*[1]: *Acreage, production, and November 15 price, United States, 1915–1926*

Year	Thousand of acres	Average yield in bushels per acre	Production, thousands of bushels	Price per bushel, received by producers, Nov. 15
1915	4,153	27.6	114,460	44.7
1916	3,944	13.7	53,858	105.9
1917	5,153	11.9	61,409	161.9
1918	6,036	12 1	73,241	150.0
1919	5,000	26.8	130,734	127.4
1920	5,120	26.8	137,408	92.9
1921	4,635	24.6	113,990	39.1
1922	5,064	17.9	90,524	87.8
1923	5,792	18.3	105,835	94.0
1924	3,813	21.1	80,443	85.2
1925	4,120	18.3	75,230	[2] 75.5
1926 [3]	4,410	22.8	100,710	[2] 54.5

Division of Crop and Livestock Estimates.

[1] Kafirs, milo maize, feterita. [2] Dec. 1 price. [3] Preliminary.

TABLE 120.—*Sorghums*[1]: *Acreage, production, and December 1 price, by States, 1924–1926*

State	Acreage			Average yield per acre			Production			Price per bushel, received by producers, Dec. 1		
	1924	1925	1926 [2]	1924	1925	1926	1924	1925	1926 [2]	1924 [3]	1925	1926
	1,000 acres	*1,000 acres*	*1,000 acres*	*Bush.*	*Bush.*	*Bush.*	*1,000 bush.*	*1,000 bush.*	*1,000 bush.*	*Cts.*	*Cts.*	*Cts.*
Iowa	7	7	10	22.0	23 2	22.0	154	162	220	115	100	80
Missouri	63	57	57	15.0	15.0	18.0	945	855	1,026	115	100	80
Nebraska	25	20	22	18.0	15.0	10.6	450	300	233	91	75	80
Kansas	1,144	1,100	1,078	21.4	20.7	18.0	24,482	22,770	19,404	80	71	60
Oklahoma	975	1,053	1,158	20.0	13.5	21.0	19,500	14,216	24,318	77	75	45
Texas	1,300	1,625	1,788	22.0	19.0	27.0	28,600	30,875	48,276	87	76	55
Colorado	50	50	47	9 0	12 0	9.0	450	600	423	90	71	60
New Mexico	135	90	119	20.0	20.0	22 0	2,700	1,800	2,618	100	65	40
Arizona	30	30	35	20.0	22.0	32 0	600	660	1,120	130	66	60
California	84	88	96	30.5	34 0	32.0	2,562	2,992	3,072	135	107	84
United States	3,813	4,120	4,410	21.1	18.3	22.8	80,443	75,230	100,710	85.2	75.5	54.5

Division of Crop and Livestock Estimates.

[1] Kafirs, milo maize, feterita. [2] Preliminary. [3] Nov. 15 price.

TABLE 121.—*Kafir: Monthly and yearly receipts at Kansas City, 1909–1926*

[Thousand pounds=i. e., 000 omitted]

Year beginning November	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Total
Average:													
1909–1913	9,884	15,205	15,101	12,813	6,431	5,162	4,868	4,887	2,357	1,207	1,428	2,652	81,994
1914–1920	7,828	26,094	30,148	25,673	26,202	20,115	17,175	19,694	14,389	8,030	4,742	4,723	204,813
1921–1925	17,383	32,759	27,936	------	19,231	14,809	------	16,041	9,536	5,606	3,597	4,053	195,672
1909	5,940	2,820	7,020	8,400	9,000	2,520	1,800	1,140	660	420	300	200	40,220
1910	6,000	16,050	12,550	10,050	4,800	2,900	4,000	3,150	1,700	2,350	1,050	3,450	68,050
1911	11,300	18,100	14,291	22,945	10,718	11,088	10,410	6,776	4,189	2,587	3,450	5,790	121,644
1912	24,948	36,098	34,188	18,665	6,222	8,439	7,207	12,505	5,051	616	1,848	1,478	157,265
1913	1,232	2,957	7,454	4,004	1,417	862	924	862	185	62	493	2,341	22,793
1914[1]	17,433	40,286	37,022	34,619	10,595	27,227	14,106	10,410	11,519	11,396	6,283	7,269	28,165
1915[1]	20,574	62,524	32,088	32,424	35,616	33,376	30,352	33,880	21,504	9,576	5,600	2,016	319,530
1916[1]	1,512	5,432	10,780	15,338	4,004	2,526	2,156	493	431	431	308	308	43,719
1917[1]	4,928	15,585	25,995	21,560	28,336	18,049	5,482	5,975	2,218	1,602	493	370	130,593
1918[1]	2,834	9,117	8,562	9,425	21,498	18,418	21,006	5,298	8,932	3,634	4,866	4,497	118,087
1919[1]	1,232	13,059	41,703	40,410	51,519	25,133	30,246	45,769	42,997	13,182	8,932	6,899	321,081
1920[1]	6,283	36,652	54,886	25,934	31,847	16,078	16,878	36,036	13,121	16,386	6,714	11,704	272,519
1921[1]	14,722	19,589	26,365	30,061	21,930	17,494	11,149	11,889	8,378	4,682	1,971	6,714	174,944
1922	9,425	24,886	23,531	13,059	9,486	7,762	4,250	2,772	3,881	1,971	1,047	986	103,056
1923	10,903	19,589	28,358	32,402	22,299	19,034	15,338	14,661	13,983	5,914	3,511	5,790	276,605
1924	36,221	64,495	38,254	------	27,843	17,928	------	24,640	12,382	10,226	3,819	1,355	237,161
1925	15,646	35,235	23,173	16,262	14,599	11,827	16,262	26,242	9,055	5,236	7,638	5,421	186,596
1926	22,238	27,597	------	------	------	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from Kansas City Annual Statistical Report, Board of Trade, and Grain Dealers Journal.

[1] Kafir, milo maize, and feterita included from January, 1915–December, 1921.

TABLE 122.—*Grain sorghums: Classification of cars graded by licensed inspectors, all inspection points*

	Total of all classes and subclasses under each grade, by cars, annual, 1925											
	Receipts						Shipments					
	No. 1	No. 2	No. 3	No. 4	Sample	Total	No. 1	No. 2	No. 3	No 4	Sample	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars.*
Year beginning July 1, 1925 [1]	312	4,158	5,796	1,639	495	12,400	101	1,802	2,017	297	48	4,265
	Total inspections, by grade and class, July 1, 1925, to June 30, 1926											
Class:												
Kafir	88	2,039	1,817	672	189	4,805	11	772	743	119	11	1,656
Milo	196	1,426	3,066	667	179	5,534	18	475	743	109	17	1,362
Durra	7	5	------	1	1	14	------	------	------	------	------	------
Feterita	------	10	10	1	------	21	------	2	1	------	------	3
Darso	2	14	6	8	1	31	------	3	2	------	2	7
Mixed	19	664	897	290	125	1,995	72	550	528	69	18	1,237
	Total of all classes and subclasses under each grade, by percentages, annual, 1925											
	P. ct.	*P. ct.*	*P. ct*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
Year beginning July 1, 1925 [1]	2.5	33.5	46.8	13.2	4.0	100	2.4	42.2	47.3	7.0	1.1	100
	Total inspections, by grade and class, July 1, 1925, to June 30, 1926											
Class:												
Kafir	1.8	42.5	37.8	14.0	3.9	100	0.7	46.6	44.9	7.2	0.6	100
Milo	3.5	25.8	55.4	12.1	3.2	100	1.3	34.9	54.6	8.0	1.2	100
Durra	50.0	35.7	------	7.2	7.1	100	------	------	------	------	------	------
Feterita	------	47.6	47.6	4.8	------	100	------	66.7	33.3	------	------	100
Darso	6.4	45.2	19.4	25.8	3.2	100	------	42.8	28.6	------	28.6	100
Mixed	.9	33.3	45.0	14.5	6.3	100	5.8	44.5	42.7	5.6	1.4	100

Grain Division.

[1] First complete year of inspection.

Table 123.—*Kafir, No. 2 White: Weighted average price per 100 pounds of reported cash sales, Kansas City, 1909–1926*

Year beginning November	Nov	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Weighted average[1]
	Dolls	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1909–1913	1.19	1.15	1.25	------	1.23	------	1.37	------	------	------	------	------	--------
1914–1920	2.10	2.03	2.02	2.04	2.06	2.09	2.22	2.20	2.36	2.53	2.32	2.15	2.17
1921–1925	------	1.39	------	1.45	1.41	1.42	1.42	1.54	1.65	------	------	------	--------
1909	1.20	1.31	1.53	1.42	1.37	1.32	1.46	1.50	1.53	1.81	1.78	1.19	1.45
1910	1.12	.96	.96	.93	.94	.94	1.06	1.24	1.42	1.34	1.27	1.21	1.12
1911	1.06	.99	1.19	(2)	1.29	1.43	1.44	1.25	1.63	1.68	1.36	1.13	1.31
1912	.98	.86	.85	.83	.81	.82	.88	1.11	1.09	1.41	1.53	1.51	1.06
1913	1.57	1.63	1.72	1.72	1.76	(2)	2.00	(2)	(2)	(2)	(2)	(2)	--------
1914	1.04	1.14	1.33	1.38	1.28	1.18	1.14	1.20	1.16	1.09	1.04	1.06	1.17
1915	.91	.99	.99	.96	.93	1.06	1.05	1.11	1.22	[illegible]	1.71	1.84	1.19
1916	2.34	2.11	2.43	2.48	2.66	3.17	3.79	3.36	4.00	[illegible].48	4.34	3.69	3.24
1917	3.40	3.25	3.33	3.69	3.84	3.37	2.93	2.65	3.08	3.40	3.40	3.27	3.28
1918	2.96	2.61	2.60	2.70	2.56	2.67	2.97	3.42	3.51	3.61	2.41	2.34	2.86
1919	2.67	2.93	2.49	2.17	2.31	2.38	2.65	2.52	2.36	2.43	2.24	1.81	2.41
1920	1.39	1.17	.98	.91	.85	.80	1.03	1.12	1.21	1.13	1.13	1.02	1.06
1921	.85	.90	.90	1.29	1.32	1.20	1.28	1.38	1.66	1.72	1.98	1.83	1.36
1922	1.78	1.63	1.59	1.60	1.66	1.72	1.76	1.67	1.50	1.48	(2)	(2)	--------
1923	(2)	1.27	(2)	1.22	1.19	1.30	1.10	1.51	1.68	(2)	2.01	1.59	--------
1924	1.57	1.75	1.95	1.84	1.66	1.65	1.74	1.88	2.01	2.08	1.91	1.79	1.81
1925	1.46	1.38	1.37	1.29	1.21	1.25	1.23	1.25	1.41	1.35	1.32	1.27	1.30
1926	1.14	1.14	------	------	------	------	------	------	------	------	------	------	--------

Division of Statistical and Historical Research. Compiled from Kansas City Price Current and Grain Market Review.

[1] Average of daily prices weighted by car-lot sales.

[2] No quotations.

FRUITS AND VEGETABLES

APPLES

TABLE 124.—*Apples: Total production in the United States, 1909–1926*

Year	Production	Year	Production	Year	Production	Year	Production
	Bushels		*Bushels*		*Bushels*		*Bushels*
1909	*145,412,000*	1914	253,200,000	1919	142,086,000	1924	171,725,000
1910	141,640,000	1915	230,011,000	1920	223,677,000	1925	172,389,000
1911	214,020,000	1916	193,905,000	1921	99,002,000	1926 [1]	246,460,000
1912	235,220,000	1917	166,749,000	1922	202,702,000		
1913	145,410,000	1918	169,625,000	1923	202,842,000		

Division of Crop and Livestock Estimates. Census figures are in italics.

[1] Preliminary.

TABLE 125.—*Apples: Total production, by States, 1922–1926*

[Thousand bushels—i. e , 000 omitted]

State	1922	1923	1924	1925	1926 [1]	State	1922	1923	1924	1925	1926 [1]
Me	1,250	2,500	3,241	3,305	2,260	S. C	383	274	600	386	647
N. H	775	935	1,462	1,230	1,240	Ga	1,135	864	1,500	741	1,827
Vt	960	521	895	935	800	Ky	5,070	2,625	5,700	2,625	6,408
Mass	3,010	3,300	3,360	3,160	4,100	Tenn	4,250	1,311	4,800	1,984	5,360
R. I	200	450	324	299	391	Ala	1,098	731	1,190	595	1,328
Conn	1,300	1,600	1,480	1,375	1,900	Miss	216	120	270	221	324
N. Y	36,000	25,000	22,000	32,500	40,375	Ark	2,400	3,025	4,100	4,315	3,450
N. J	2,610	2,203	2,800	2,660	4,310	La	37	31	30	28	35
Pa	11,400	10,855	7,800	7,300	17,000	Okla	1,140	1,240	1,170	644	770
Ohio	7,298	12,395	6,350	6,300	11,900	Tex	264	270	330	264	380
Ind	4,148	5,035	1,800	2,430	4,100	Mont	610	990	290	80	325
Ill	9,720	7,500	6,400	7,300	8,875	Idaho	3,900	5,600	2,178	6,029	4,200
Mich	11,850	13,159	6,000	9,000	9,045	Wyo	40	35	50	25	47
Wis	2,024	2,340	1,378	2,106	2,158	Colo	4,250	3,010	3,024	3,200	3,444
Minn	1,020	1,520	850	820	1,263	N. Mex	750	1,400	840	1,021	1,147
Iowa	4,410	4,350	2,800	2,400	3,652	Ariz	77	128	70	98	112
Mo	9,400	7,072	4,300	4,100	5,015	Utah	1,085	1,119	600	1,300	817
S. Dak	263	212	150	62	169	Nev	35	56	40	74	42
Nebr	1,620	880	1,000	450	761	Wash	25,775	33,000	22,000	29,550	34,030
Kans	3,280	2,166	2,200	1,600	1,428	Oreg	6,300	8,000	6,500	5,400	8,036
						Calif	7,850	10,500	8,903	6,016	10,350
Del	1,414	1,200	1,250	1,340	2,376						
Md	1,500	2,300	1,850	1,900	3,500	U. S	202,702	202,842	171,725	172,389	246,460
Va	8,960	10,000	14,500	7,844	19,902						
W. Va	5,625	8,320	7,000	4,185	10,875						
N. C	6,000	2,700	6,350	3,192	5,986						

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 126.—*Apples: Car-lot shipments, by State of origin, June, 1920–June, 1926*

State	Crop movement season [1]					
	1920	1921	1922	1923	1924	1925 [2]
BOX AREA	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Montana	443	689	351	461	173	29
Idaho	2,977	5,913	4,230	6,935	2,223	7,485
Colorado	3,063	3,882	3,385	2,718	2,404	3,193
New Mexico	293	636	445	1,368	864	1,112
Arizona	5	3	14	9	----------	6
Utah	603	740	718	947	338	1,198
Washington	22,213	33,355	28,291	37,633	25,156	35,046
Oregon	3,265	6,588	3,895	6,428	5,515	4,702
California	4,413	5,062	4,961	6,505	4,891	2,531
Total box	37,275	56,868	46,290	63,0[illegible]	41,564	55,302
BARREL AREA						
Maine	425	4,499	290	918	2,115	1,320
New Hampshire	287	334	187	311	805	498
Massachusetts	609	166	284	246	587	302
New York	35,736	17,779	30,080	20,434	16,631	29,498
New Jersey	897	187	446	399	130	441
Pennsylvania	3,462	242	2,050	4,033	1,706	2,486
Ohio	1,036	627	425	1,051	1,046	1,022
Illinois	4,087	503	6,297	6,832	5,867	6,560
Michigan	7,367	6,096	6,076	9,266	3,443	6,003
Missouri	1,933	115	3,083	4,050	2,939	3,056
Kansas	832	64	1,083	1,412	1,294	1,165
Delaware	782	125	1,751	1,590	1,384	1,896
Maryland	1,739	129	1,150	2,181	1,239	1,333
Virginia	8,911	409	6,975	9,830	13,080	7,502
West Virginia	4,912	779	2,240	7,332	3,762	3,927
Arkansas	3,868	6	2,620	2,763	5,451	3,191
Other States	1,959	632	2,632	2,532	2,801	2,400
Total barrel	78,842	32,692	67,669	75,180	62,280	72,600
Total box and barrel	116,117	89,560	113,959	138,184	103,844	127,902

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to carlot bais.

[1] Crop movement season extends from June 1 of one year through June of the following year.
[2] Preliminary

TABLE 127.—*Apples (commercial crop): Production by States, 1921–1926*

[Thousand barrels—i. e., 000 omitted]

State	1921	1922	1923	1924	1925	1926 [1]	State	1921	1922	1923	1924	1925	1926 [1]
Me	657	232	480	660	645	150	Va	80	1,400	1,950	2,520	1,440	3,348
N. H	110	119	150	292	237	254	W. Va	130	881	1,400	800	749	1,700
Vt	116	128	89	160	170	155	N. C	25	236	100	307	160	345
Mass	172	461	600	675	655	880	Ga	58	95	60	120	60	152
R. I	8	20	80	64	57	79	Ky	31	169	70	162	70	167
Conn	70	108	200	285	300	350	Tenn	45	95	30	106	41	125
N. Y	3,300	6,000	4,200	3,738	6,250	6,500	Ala	15	18	12	------	------	------
N. J	132	552	470	612	607	944	Ark	16	520	656	720	650	500
Pa	221	1,216	1,266	780	1,011	1,706	Okla	21	38	42	54	29	31
Ohio	360	608	1,033	694	678	1,006	Tex	21	15	15	------	------	------
Ind	109	277	300	145	200	288	Mont	175	115	130	70	14	85
Ill	397	1,450	1,400	1,100	1,215	1,250	Idaho	1,359	1,150	1,600	690	1,750	925
Mich	1,208	1,699	2,118	1,000	1,700	1,489	Colo	812	1,034	803	806	950	969
Wis	64	101	136	98	157	155	N. Mex	123	150	315	189	260	191
Minn	64	41	61	38	38	57	Ariz	6	9	14	7	10	11
Iowa	25	220	290	150	80	134	Utah	198	198	260	120	300	160
Mo	30	1,250	850	588	646	619	Wash	8,300	7,341	9,600	6,275	8,670	8,550
S. Dak	------	4	3	------	------	------	Oreg	1,667	1,260	1,750	1,500	1,296	1,700
Nebr	17	130	103	120	65	76	Calif	1,352	1,399	2,100	1,490	1,097	2,048
Kans	29	546	400	344	285	310							
Del	14	380	340	310	380	660	U. S	21,557	31,945	35,930	28,013	33,246	39,095
Md	20	280	460	314	324	600							

Division of Crop and Livestock Estimates. Included in "Apples" (Table 171).
By commercial crop is meant that portion of the total crop which is sold for consumption as fresh fruits, 1 barrel is equivalent to 3 boxes.

[1] Preliminary.

TABLE 128.—*Apples: Car-lot shipments, by State of origin, June, 1920–December, 1926*

State and year	Crop movement season [1]													
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
New York:	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
1920	------	16	762	2, 681	9, 875	8, 488	3, 521	2, 795	3, 415	2, 611	1, 039	452	81	35, 736
1921	------	135	867	3, 130	5, 894	1, 221	829	1, 090	1, 485	1, 472	970	563	123	17, 779
1922	------	71	1, 367	3, 568	8, 012	5, 710	1, 908	2, 193	2, 241	2, 390	1, 482	903	166	30, 080
1923	------	4	334	1, 715	4, 297	3, 317	1, 201	1, 697	2, 005	2, 839	1, 711	1, 015	299	20, 434
1924	------	7	591	1, 494	3, 966	2, 994	1, 186	1, 576	1, 586	1, 536	1, 001	577	117	16, 631
1925 [2]	------	36	693	2, 886	7, 426	5, 102	1, 889	2, 305	2, 929	3, 044	1, 833	1, 026	329	29, 498
1926 [2]	------	3	240	1, 680	4, 249	3, 746	1, 721	------	------	------	------	------	------	------
Pennsylvania.														
1920	------	29	47	222	1, 424	664	366	292	256	152	9	1	------	3, 462
1921	------	------	1	72	119	16	7	7	15	9	2	------	------	242
1922	------	19	23	270	849	375	220	177	71	21	17	8	------	2, 050
1923	------	20	30	382	1, 611	933	292	303	288	143	19	9	3	4, 033
1924	------	4	5	67	630	337	163	240	152	74	21	13	------	1, 706
1925 [2]	------	17	52	333	982	342	223	216	176	102	31	12	------	2, 486
1926 [2]	------	11	27	316	1, 541	1, 006	332	------	------	------	------	------	------	------
Illinois:														
1920	50	557	192	1, 037	1, 517	353	33	46	44	111	83	59	5	4, 087
1921	39	27	57	148	101	10	9	33	46	12	7	12	2	503
1922	310	650	342	1, 687	2, 037	864	59	65	85	88	61	48	1	6, 297
1923	22	481	203	1, 603	3, 519	607	78	75	70	45	68	39	22	6, 832
1924	37	484	305	1, 155	2, 949	502	79	69	63	57	42	105	20	5, 867
1925 [2]	257	563	443	1, 955	2, 630	460	44	41	37	47	66	17	------	6, 560
1926 [2]	40	603	137	713	2, 002	483	70	------	------	------	------	------	------	------
Michigan:														
1920	------	65	1, 207	1, 247	2, 793	1, 518	237	92	91	78	38	1	------	7, 307
1921	------	538	1, 260	1, 783	2, 352	117	15	12	11	7	1	------	------	6, 096
1922	------	307	913	1, 000	2, 739	890	95	42	33	35	20	2	------	6, 076
1923	------	39	1, 220	1, 406	3, 851	1, 970	240	80	142	193	90	28	7	9, 266
1924	------	2	388	657	1, 443	727	60	35	37	37	40	16	1	3, 443
1925 [2]	------	44	734	1, 010	2, 790	1, 120	107	42	61	40	33	22	------	6, 003
1926 [2]	5	4	378	512	1, 638	1, 136	85	------	------	------	------	------	------	------
Missouri:														
1920	------	5	45	413	877	217	69	68	83	87	43	19	7	1, 933
1921	------	3	3	31	59	16	------	2	1	------	------	------	------	115
1922	8	11	84	825	1, 362	301	81	74	78	94	80	73	12	3, 083
1923	1	17	33	785	2, 002	653	140	61	62	62	61	102	71	4, 050
1924	2	20	44	606	1, 590	257	105	92	76	57	37	48	5	2, 939
1925 [2]	15	23	114	745	1, 488	315	56	56	61	90	53	34	6	3, 056
1926 [2]	7	22	19	357	937	154	52	------	------	------	------	------	------	------
Virginia:														
1920	------	48	101	1, 577	3, 310	1, 226	821	715	450	378	202	77	6	8, 911
1921	------	------	14	193	104	14	34	16	10	16	8	------	------	409
1922	5	32	300	1, 741	2, 349	1, 139	465	342	133	94	98	160	117	6, 975
1923	------	50	129	1, 963	3, 892	1, 482	773	712	304	200	115	101	109	9, 830
1924	------	59	171	2, 338	5, 855	2, 503	580	552	306	341	164	137	76	13, 080
1925 [2]	------	46	297	2, 676	2, 418	696	435	350	215	226	87	46	10	7, 502
1926 [2]	------	65	297	3, 810	5, 874	3, 123	98	------	------	------	------	------	------	------
West Virginia:														
1920	------	67	82	771	2, 185	869	249	188	145	148	111	87	10	4, 912
1921	------	5	18	404	160	20	27	15	42	59	27	2	------	779
1922	10	28	75	451	1, 005	310	141	84	37	36	38	25	------	2, 240
1923	------	78	118	1, 162	3, 446	1, 585	340	271	108	114	39	35	36	7, 332
1924	------	48	91	516	1, 762	721	220	127	106	69	58	34	10	3, 762
1925 [2]	------	88	136	1, 015	1, 729	593	153	91	64	15	11	18	14	3, 927
1926 [2]	------	65	119	1, 325	2, 729	1, 608	400	------	------	------	------	------	------	------
Arkansas:														
1920	15	36	205	1, 360	1, 760	183	71	86	77	47	28	------	------	3, 868
1921	------	------	------	1	------	------	------	------	------	------	3	2	------	6
1922	41	37	441	769	975	144	57	47	35	49	24	1	------	2, 620
1923	11	13	190	727	1, 116	506	29	29	25	36	42	38	1	2, 763
1924	11	39	113	934	1, 593	447	106	68	70	40	28	4	------	3, 451
1925 [2]	8	89	597	521	1, 353	294	76	35	84	86	38	10	------	3, 191
1926 [2]	17	38	142	319	739	292	85	------	------	------	------	------	------	------
Idaho:														
1920	------	------	------	153	1, 443	733	221	147	129	124	20	4	3	2, 977
1921	------	2	22	1, 191	3, 101	855	286	149	214	66	9	12	6	5, 913
1922	------	------	3	68	1, 649	1, 236	384	377	287	198	16	11	1	4, 230
1923	------	1	5	266	2, 595	1, 895	660	648	543	237	56	17	12	6, 935
1924	------	1	------	397	888	606	193	77	37	13	3	7	1	2, 223
1925 [2]	------	1	10	882	2, 967	1, 543	844	446	393	217	143	37	2	7, 485
1926 [2]	------	2	3	1, 221	1, 558	399	261	------	------	------	------	------	------	------

[1] Crop movement season extends from June 1 of one year through June of the following year.
[2] Preliminary.

TABLE 128.—*Apples: Car-lot shipments, by State of origin, June, 1920–December, 1926*—Continued

State and year	Crop movement season [1]													
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Colorado:	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
1920	------	1	3	166	1, 793	761	117	73	89	51	7	2	------	3, 063
1921	------	------	13	861	2, 224	430	141	103	91	14	5	------	------	3, 882
1922	------	------	2	158	1, 213	1, 027	601	225	111	43	5	------	------	3, 385
1923	------	------	4	274	1, 150	579	289	118	197	95	12	------	------	2, 718
1924	------	------	3	239	1, 205	580	223	65	57	27	5	------	------	2, 404
1925 [2]	------	1	5	429	1, 374	734	326	118	100	72	29	5	------	3, 193
1926 [2]	------	1	1	211	1, 278	724	260	------	------	------	------	------	------	------
Washington:														
1920	------	23	88	760	7, 923	4, 996	2, 138	1, 158	1, 717	1, 490	1, 066	609	185	22, 213
1921	------	44	151	2, 671	12, 980	7, 847	3, 076	2, 060	2, 293	994	636	491	112	33, 355
1922	------	33	78	2, 187	6, 792	5, 596	3, 298	4, 194	3, 007	2, 004	78[illegible]	294	28	28, 291
1923	------	65	204	2, 486	13, 111	7, 871	2, 708	3, 410	3, 813	1. 962	1, [illegible]74	818	111	37, 633
1924	8	26	192	3, 186	9, 056	5, 527	2, 066	1, 669	1, 085	730	737	606	268	25, 156
1925 [2]	------	108	422	5, 179	11, 602	5, 916	2, 503	2, 029	2, 263	1, 858	1, 519	1, 114	533	35, 046
1926 [2]	------	62	555	5, 680	11, 675	5, 874	2, 676	------	------	------	------	------	------	------
Oregon:														
1920	------	2	1	95	998	1, 106	451	273	197	96	34	12	------	3, 265
1921	------	9	9	323	2, 367	1, 913	1, 000	498	309	109	44	6	1	6, 588
1922	------	1	1	98	867	1, 239	707	451	314	191	23	3	------	3, 895
1923	------	19	27	371	2, 241	2, 012	635	482	394	186	59	1	1	6, 428
1924	------	------	40	497	2, 329	1, 459	613	323	129	82	41	1	1	5, 515
1925 [2]	1	6	34	474	2, 166	992	344	213	170	159	103	40	------	4, 702
1926 [2]	5	10	105	769	2, 435	1, 520	547	------	------	------	------	------	------	------
California:														
1920	5	219	584	998	1, 002	787	389	116	86	70	78	67	12	4, 413
1921	10	301	677	1, 250	1, 534	714	174	120	117	101	42	21	1	5, 062
1922	2	212	998	782	920	887	495	179	103	168	107	78	30	4, 961
1923	61	1, 290	984	1, 277	1, 431	771	219	122	77	123	55	65	30	6, 505
1924	22	734	645	943	1, 185	695	186	120	111	97	85	59	9	4, 891
1925 [2]	53	341	155	498	691	227	90	99	100	109	74	63	31	2, 531
1926 [2]	90	1, 494	591	959	990	352	149	------	------	------	------	------	------	------
Other States:														
1920	85	889	455	1, 280	3, 990	1, 950	539	218	197	216	66	24	1	9, 910
1921	43	175	452	1, 876	4, 131	1, 624	324	86	58	44	9	8	1	8, 831
1922	495	1, 311	393	1, 831	3, 820	1, 327	250	123	76	82	56	11	1	9, 776
1923	58	1, 283	641	2, 272	5, 614	2, 390	457	290	185	135	68	27	5	13, 425
1924	125	938	538	1, 611	5, 415	2, 876	619	283	209	117	33	8	1	12, 776
1925 [2]	99	1, 532	638	2, 350	5, 325	1, 762	282	211	202	163	94	50	14	12, 722
1926 [2]	102	1, 374	627	2, 087	4, 407	1, 788	474	------	------	------	------	------	------	------
Total:														
1920	155	1, 957	3, 772	12, 760	40, 890	23, 851	9, 222	6, 267	6, 976	5, 659	2, 824	1, 474	310	116, 117
1921	92	1, 239	3, 544	13, 934	35, 126	14, 791	5, 922	4, 191	4, 692	2, 900	1, 763	1, 117	246	89, 560
1922	871	2, 712	5, 020	15, 435	34, 589	21, 045	8, 821	8, 573	6, 611	5, 502	2, 807	1, 617	356	113, 959
1923	153	3, 360	4, 122	16, 689	49, 876	26, 571	8, 061	8, 298	8, 213	6, 370	3, 469	2, 295	707	138, 184
1924	205	2, 362	3, 126	14, 641	39, 866	20, 231	6, 399	5, 294	4, 024	3, 277	2, 295	1, 615	509	103, 844
1925 [2]	433	2, 895	4, 330	20, 953	44, 941	20, 096	7, 372	6, 252	6, 855	6, 228	4, 114	2, 494	939	127, 902
1926 [2]	266	3, 754	3, 241	19, 959	42, 052	22, 205	7, 210	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in carlots include those by boat reduced to carlot basis.

[1] Crop movement season extends from June 1 of one year through June of the following year.
[2] Preliminary.

TABLE 129.—*Apples: International trade, average 1911–1913, annual 1923–1925*

[Thousands of barrels of 144 pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Australia	26	380		[1] 455		[1] 608		
Belgium	264	312	41	263	101	328	100	433
Canada	280	1,286	185	1,609	177	1,524	153	1,337
France [2]	89	2,380	180	434	63	1,809	96	1,453
Italy	13	220	(3)	153	(3)	333	(3)	379
Netherlands	35	311	107	251	121	353	51	726
New Zealand	[3] 17	[3] 5	6	41	13	68	13	59
Rumania	2	(3)	(3)	13	(3)	140	(3)	361
United States	(4)	3,290	44	2,959	32	4,120	28	3,348
PRINCIPAL IMPORTING COUNTRIES								
Brazil	27		17		36		47	
Cuba	13		30		29			
Denmark	36	1	131	(3)	132	(3)	131	(3)
Egypt [2]	(4)	(4)	162	1	162	1	112	(3)
Finland	64		49		51		47	
Germany	4,818	31	505	14	3,767	26	2,860	23
Irish Free State					147		163	
Norway [2]	74	(3)	117	(3)	63	(3)	56	(3)
Poland					50	2	28	14
Sweden	44	1	154	1	216	(3)	202	(3)
United Kingdom	2,562		4,827		5,250		4,385	
Other countries		78	114	60	170	50	161	35
Total	8,364	8,295	6,669	6,254	10,583	9,362	8,633	8,168

Division of Statistical and Historical Research. Official sources.

[1] Year beginning July 1.
[2] Includes pears.
[3] Less than 500 barrels.
[4] Not separately stated.

TABLE 130.—*Apples: Cold-storage holdings, United States, 1915–1926*

[Thousand—i. e., 000 omitted]

BARRELS [1]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	Oct. 1	Nov. 1	Dec. 1
Average:									
1916–1920	2,890	2,293	1,605	955	434	127		2,925	3,507
1921–1925	3,604	2,817	2,012	1,173	586	204	811	3,712	4,199
1915	2,929	2,438	1,716	896	299	61		3,093	4,213
1916	3,743	3,324	2,543	1,561	799	218		2,530	3,166
1917	2,680	2,121	1,560	1,044	543	183		2,558	3,195
1918	2,754	2,226	1,575	978	356	101		2,915	3,280
1919	2,582	1,704	962	487	198	68	824	3,108	3,326
1920	2,693	2,092	1,385	705	274	64	452	3,516	4,570
1921	3,966	3,016	2,020	1,027	449	170	570	1,822	1,979
1922	1,742	1,424	996	561	248	74	1,219	4,133	4,319
1923	3,708	2,839	2,013	1,199	578	150	664	4,019	5,477
1924	4,962	3,993	3,024	1,925	1,113	451	543	3,551	4,167
1925	3,643	2,811	2,006	1,151	543	175	1,058	4,434	5,051
1926	4,556	3,714	2,667	1,531	727	262	601	3,933	5,458

[1] All apples, except those packed in western-style boxes, are tabulated in terms of barrels, on the basis of 3 bushels to the barrel; since Oct. 1, 1923, apples packed in bushel baskets are also included in this tabulation. Three boxes are considered the equivalent of 1 barrel.

TABLE 130.—*Apples: Cold-storage holdings, United States, 1915–1926*—Con.

[Thousand—i. e., 000 omitted]

BOXES

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	Oct. 1	Nov. 1	Dec. 1
Average:									
1916–1920	5, 349	4, 644	3, 254	1, 916	923	259	--------	2, 808	5, 570
1921–1925	9, 986	8, 272	6, 170	4, 050	2, 055	710	809	6, 460	11, 075
1915	4, 091	3, 441	2, 323	1, 341	525	142	--------	1, 789	3, 685
1916	3, 210	2, 738	2, 096	1, 268	709	258	--------	2, 190	3, 977
1917	4, 356	3, 790	2, 646	1, 504	796	246	--------	2, 216	4, 483
1918	5, 534	5, 192	3, 764	2, 416	966	172	--------	2, 513	4, 945
1919	5, 137	4, 205	2, 431	1, 410	545	170	440	4, 244	7, 793
1920	8, 508	7, 296	5, 331	2, 982	1, 598	447	277	2, 878	6, 651
1921	7, 259	6, 266	4, 890	3, 548	2, 009	826	667	5, 464	11, 281
1922	11, 061	8, 667	6, 282	4, 107	2, 088	721	669	4, 164	7, 271
1923	8, 319	7, 612	5, 593	3, 345	1, 475	380	789	6, 886	13, 866
1924	14, 201	11, 550	8, 821	5, 837	2, 901	949	829	6, 620	9, 917
1925	9, 089	7, 264	5, 266	3, 412	1, 801	674	1, 091	9, 165	13, 041
1926	11, 868	10, 009	7, 898	5, 350	2, 892	1, 104	1, 809	9, 523	15, 083

ALL APPLES IN TERMS OF BARRELS [1]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	Oct. 1	Nov. 1	Dec. 1
Average:									
1916–1920	4, 673	3, 841	2, 690	1, 593	741	213	--------	3, 861	5, 364
1921–1925	6, 933	5, 574	4, 069	2, 523	1, 271	441	1, 083	5, 865	7, 890
1915	4, 293	3, 585	2, 491	1, 343	474	108	--------	3, 689	5, 441
1916	4, 813	4, 236	3, 242	1, 984	1, 035	304	--------	3, 260	4, 492
1917	4, 132	3, 385	2, 442	1, 545	808	265	--------	3, 296	4, 689
1918	4, 599	3, 957	2, 830	1, 783	678	159	--------	3, 752	4, 928
1919	4, 294	3, 105	1, 772	956	380	125	971	4, 523	5, 923
1920	5, 529	4, 524	3, 162	1, 699	806	213	544	4, 475	6, 787
1921	6, 386	5, 105	3, 650	2, 210	1, 119	445	792	3, 643	5, 739
1922	5, 429	4, 313	3, 090	1, 930	944	314	1, 452	5, 521	6, 743
1923	6, 481	5, 376	3, 877	2, 314	1, 070	277	927	6, 914	10, 099
1924	9, 696	7, 843	5, 965	3, 871	2, 080	768	820	5, 758	7, 473
1925	6, 673	5, 233	3, 761	2, 288	1, 143	399	1, 422	7, 489	9, 398
1926	8, 512	7, 051	5, 300	3, 314	1, 691	630	1, 204	7, 107	10, 436

Cold Storage Report Section.

[1] All apples, except those packed in western-style boxes, are tabulated in terms of barrels, on the basis of 3 bushels to the barrel; since Oct. 1, 1923, apples packed in bushel baskets are also included in this tabulation Three boxes are considered the equivalent of 1 barrel.

TABLE 131.—*Apples: Estimated price per bushel, received by producers, United States, 1910–1926*

Year beginning June	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	Weighted av.
Average:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1910–1913	111.2	85.0	72.4	70.6	72.5	80.1	90.6	98.3	104.7	109.9	119.0	127.2	81.1
1914–1920	156.3	127.3	105.7	99.8	105.8	113.3	126.1	126.9	134.0	142.2	150.7	165.1	113.6
1921–1925	185.2	162.7	127.8	119.2	128.0	135.8	142.5	145.5	154.2	155.1	156.4	175.8	134.2
1910	112.0	76.9	73.8	73.6	77.4	89.3	100.2	115.7	118.6	124.7	138.8	139.6	88.1
1911	135.4	94.8	73.0	70.2	65.8	73.1	86.1	92.7	98.8	103.5	114.9	128.8	76.6
1912	108.0	82.5	67.5	62.2	61.3	63.5	72.6	74.3	78.4	82.4	85.0	94.0	66.8
1913	101.2	86.0	75.2	76.5	85.6	94.4	103.6	110.6	123.0	128.9	137.1	146.4	93.0
1914	135.6	91.2	68.6	61.6	56.0	57.3	66.6	69.3	73.1	73.4	80.1	90.6	62.7
1915	90.3	78.4	61.8	58.0	66.1	72.4	77.0	86.1	90.5	91.2	94.8	97.5	71.0
1916	104.9	85.5	80.7	75.6	82.5	92.0	103.4	104.3	114.4	126.9	137.1	142.9	90.7
1917	146.5	125.1	100.6	96.6	105.1	116.8	127.4	132.9	138.5	142.6	143.9	155.8	113.6
1918	144.6	125.7	114.5	118.9	129.4	158.9	150.9	148.9	159.8	190.1	203.5	220.8	137.5
1919	223.4	187.6	161.4	153.2	175.6	184.9	213.9	215.9	229.2	236.7	253.5	285.8	186.1
1920	249.1	196.7	152.1	134.8	125.9	130.7	143.2	130.8	132.8	134.7	142.2	162.3	133.8
1921	173.9	165.3	165.1	171.4	196.4	215.7	224.5	183.5	206.7	206.2	194.5	241.4	195.2
1922	202.7	181.7	100.4	94.3	93.4	101.5	108.6	131.5	142.3	144.9	156.5	178.7	109.4
1923	188.6	166.7	121.4	108.0	114.0	114.6	114.0	121.3	125.0	129.1	129.4	131.3	117.4
1924	159.3	141.3	121.6	109.8	115.9	119.5	128.2	144.9	150.7	155.4	158.4	179.2	122.1
1925	201.4	158.7	130.7	112.5	120.5	127.7	137.4	146.3	146.3	139.8	143.2	148.2	127.0
1926	168.7	133.8	103.8	88.4	80.2	81.6	87.7	------	------	------	------	------	--------

Division of Crop and Livestock Estimates.

TABLE 132.—*Apples: Average l. c. l. price to jobbers at five markets, 1920–1926*

IN BARRELS

Market. Season beginning September	September[1]		October		November average	December average	January average	February average	March average	April[1]		May[1]	
	Range	Average	Range	Average						Range	Average	Range	Average
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
New York:													
1920	2.75– 8.00	4.86	2.00– 9.00	5.23	5.66	4.71	4.80	5.01	6.01	3.50–10.00	6.79	4.00–13.50	8.03
1921	5.50–13.00	8.09	5.00–11.00	7.72	7.18	7.82	8.23	8.62	7.64	5.00–12.00	7.44		
1922	1.50– 7.50	3.53	2.00– 8.50	4.63	4.94	4.67	5.08	5.09	5.37	3.00– 8.50	6.03	3.75– 8.50	6.75
1923	2.00– 7.50	5.16	2.00–10.00	4.80	4.58	4.71	4.46	4.59	4.50	1.25– 9.00	4.82	1.50– 7.50	4.29
1924	2.75– 8.00	4.53	2.75– 9.00	5.82	6.51	6.21	7.16	7.84	7.82	4.00–16.00	7.80		
1925	2.50– 9.00	4.79	2.00–10.50	5.93	5.63	5.92	5.81	5.65	5.69	3.00–10.50	5.82	2.25– 9.50	6.02
1926	1.25– 6.00	3.54	1.50– 9.50	4.88	3.96	4.46							
Chicago:													
1920	3.50– 8.00	5.86	3.50– 9.00	6.28	6.29	5.23	5.36	5.15	5.38	4.50–8.00	5.55	5.00– 9.00	6.53
1921	7.00–10.00	8.26	6.00–10.50	8.00	7.97	8.10	8.48	9.07	8.49	6.00–9.00	7.86		
1922	2.00– 6.00	3.58	2.25– 7.00	4.41	4.68	4.90	4.58	4.84	5.17	4.00–7.00	5.43	4.00– 9.50	6.40
1923	2.75– 7.00	4.60	3.50– 6.25	5.06	5.12	4.96	4.90	5.12	4.99	2.00–6.00	4.28	2.00– 5.75	4.02
1924	2.50–12.00	6.25	3.75–10.00	6.31	6.80	6.21	6.50	6.64	6.70	5.25–8.50	6.90		
1925	3.00– 7.00	5.08	3.50– 6.50	5.00	5.29	5.07	5.31	5.12	4.25	2.75–6.50	4.28	3.00– 7.50	5.14
1926			3.00– 5.50	4.03	4.34	4.60							
Pittsburgh:													
1920	3.00– 6.50	4.99	3.00– 6.00	4.46	4.81	4.68	4.59	4.73	5.06	3.25–6.50	5.34	4.50– 8.50	6.81
1921	5.25– 9.00	7.22	5.00– 9.00	7.16	6.55	6.25	7.63	7.42	7.07	5.75–8.00	7.02		
1922	2.50– 4.00	3.25	2.50– 5.00	3.51	3.99	4.38	4.29	4.38	4.84	3.00–6.50	4.80	4.00– 7.00	5.44
1923	2.50– 5.50	4.06	3.00– 5.50	3.54	3.49	4.05	3.99	4.07	4.25	2.50–4.50	3.39	2.50– 4.50	3.36
1924	4.00– 5.00	4.56	2.50– 5.00	4.10	4.78	5.62	5.74	6.33	6.18	4.75–6.50	5.84		
1925	2.00– 5.00	3.46	3.00– 5.00	3.90	4.11	4.32	4.41	4.08	3.62	2.50–4.50	3.60	3.50– 5.00	4.17
1926			2.25– 4.50	2.91	2.85	3.12							
St. Louis:													
1920	3.00– 7.25	5.34	2.75– 7.50	4.67	4.97	4.83	4.68	4.88	5.23	4.75– 8.50	5.92	5.50–10.00	6.68
1921			4.85– 8.25	6.43	5.44								
1922	2.00– 4.85	3.40	1.75– 4.75	3.36	3.15	4.53	4.61	4.53	4.89	3.50– 7.50	4.89		
1923	1.75– 5.25	4.07	1.75– 5.25	3.60	3.29	4.15	3.95	4.24	4.15	1.75– 5.50	3.65		
1924	2.00– 6.50	4.40	2.00– 7.00	4.32	4.96	5.93	6.14	7.14	6.86	4.25–10.00	6.90		
1925	1.50– 6.50	3.64	2.00– 6.50	3.62	3.71	5.09	4.93	5.15	4.01	2.75– 6.00	4.30	3.00– 6.00	3.99
1926	2.50– 3.50	3.06	1.50– 4.50	3.19	2.95	4.05							
Kansas City:													
1920	7.50– 9.00	8.45	5.00– 8.00	7.25	5.95	5.66	5.58	5.97	5.73	5.75– 7.00	5.91	5.75– 6.00	5.88
1921	10.00–12.00	11.00											
1922	3.00– 4.00	3.62	3.75– 5.00	4.33	4.50	4.58	4.53	4.38	5.05	4.50– 7.50	5.82	4.75– 5.00	4.88
1923	4.00– 6.50	5.02	3.25– 5.50	4.78	4.30	4.35	4.88	4.78	4.74	3.50– 6.00	4.75	3.00– 6.00	4.45
1924	3.25– 6.00	5.67	6.00– 6.50	6.16	6.54	6.15	6.84	7.23	7.22	5.50– 8.50	7.58		
1925			4.50– 8.00	6.56	6.18	5.70	5.22	5.28	5.04	3.50– 6.50	4.90	3.75– 6.00	4.94
1926						4.26							

IN BOXES

	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
New York:													
1920	4.00–5.25	4.40	2.25–5.50	3.68	3.29	3.88	3.70	3.90	3.77	2.50–6.00	3.98	2.75–5.00	3.87
1921	2.25–6.00	4.06	2.00–5.50	3.36	2.80	3.12	3.01	3.35	3.41	2.75–4.75	3.54		
1922	1.50–4.50	2.65	1.40–5.25	2.85	2.36	2.42	2.41	2.35	2.57	1.90–3.75	2.74	2.25–4.75	3.45
1923	1.50–4.50	2.95	1.15–5.00	2.41	2.09	2.13	2.04	2.05	2.11	1.25–2.50	2.06	1.75–2.68	2.90
1924	1.75–5.00	3.26	1.50–4.50	2.95	2.92	2.93	3.23	3.28	3.50	3.00–4.50	3.92		
1925	2.00–4.00	2.64	1.90–4.00	2.78	2.59	2.85	2.47	2.44	2.48	1.75–5.25	2.63		
1926			1.30–3.00	2.15	1.89	1.76							
Chicago:													
1920	4.00–5.25	4.62			3.67	3.75	3.14	3.30	3.62	2.25–5.25	3.23	2.50–4.50	3.23
1921			2.00–4.75	3.43	3.05	3.00	3.16	3.34	3.36	2.00–4.50	3.45		
1922	1.00–2.80	1.89	1.50–3.75	2.69	2.48	2.61	2.69	2.71	3.07	2.25–5.00	2.96	1.85–5.00	2.91
1923	2.50–4.00	3.10	1.50–3.75	2.39	2.42	2.55	2.47	2.49	2.50	1.50–3.75	2.55	1.75–3.75	2.75
1924	2.25–4.25	3.09	2.25–4.50	3.41	3.42	3.68	3.72	3.56	3.58	2.25–5.00	3.79		
1925						2.82	2.86	2.54	2.40	[3] 2.00–5.25	[3] 3.47	[3] 2.00–5.25	[3] 3.02
1926						2.49							
Pittsburgh:													
1920			3.50–5.50	4.26	3.64		2.60		3.11	2.25–3.75	3.04	2.25–4.00	3.18
1921			2.00–4.75	3.22	2.85		3.07	3.26	3.50	2.25–4.50	3.13		
1922			1.50–3.00	2.17	2.00	2.32	2.22	2.28	2.49	2.00–3.50	2.71	2.25–3.50	2.96
1923			1.25–4.50	2.39	2.09	2.27	2.07	2.41	2.54	1.50–4.00	2.66	1.75–4.00	2.75
1924			2.00–4.50	3.10	2.77	3.09	3.34	3.44	3.33	3.00–5.00	3.65		
1925			2.00–3.65	2.61	2.60	2.52	2.50	2.13	2.05	1.50–2.25	2.06	2.00–2.35	2.18
1926					1.69	2.00							
Kansas City:													
1920			3.00–4.50	3.61	3.60	3.07	2.84	3.29	3.53	3.50–4.50	4.00	3.50–4.50	4.00
1921	3.75	3.75	2.75–4.50	3.54	3.63	3.52	3.49	3.59	3.75	3.00–4.50	3.48		
1922			1.75–3.50	2.76	2.78	2.75	2.74	2.70	3.18	2.75–4.00	3.32	2.75–3.25	3.00
1923	2.50–3.25	2.74	1.25–4.00	2.69	2.38	2.38	2.68	2.75	2.86	2.25–3.75	2.92	2.40–3.75	3.08
1924	1.75–4.00	2.67	1.75–5.00	3.63	3.62	3.62	3.74	3.88	3.88	3.25–4.50	3.88		
1925	2.25–3.00	2.58	2.25–3.75	2.83	2.44	2.60	2.54	2.50	2.42	1.75–3.25	2.61	2.50–2.75	2.26
1926	1.75–2.25	2.05	1.50–3.50	2.51	2.39	2.48							

Division of Statistical and Historical Research. Compiled from Daily Market Report of Division of Fruits and Vegetables. Average prices as shown are based on stock of good merchantable quality and condition; they are simple averages of daily range of selling prices. Since all varieties are included, these figures can be taken only as an index of the changes in the level of apple prices.

[1] Quotations began on Sept. 1 in 1920, 1922, 1923, 1925; Sept. 7, 1921; Sept. 2, 1924; July 14, 1926.
[2] Last reported quotations of seasons May 28, 1921; May 1, 1922; May 12, 1923; June 8, 1924; Apr. 15, 1925; May 29, 1926.
[3] Quotations on large to very large sizes.

TABLE 133.—*Apples: Average l. c. l. price per barrel to jobbers at New York, September, 1909–December, 1926*

Season beginning September	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909–1913	3.14	3.49	3.35	3.51	3.51	3.65	3.77	4.30	4.43
1914–1920	4.07	4.58	4.89	4.91	4.88	5.33	5.72	5.98	6.67
1921–1925	5.22	5.78	5.77	5.87	6.15	6.36	6.20	6.38	-------
1909	3.72	4.22	3.81	3.69	3.82	3.21	3.28	3.48	3.71
1910	3.50	3.65	3.75	4.14	4.12	4.50	4.75	5.35	5.31
1911	2.55	3.06	2.71	3.12	2.84	2.96	3.39	4.20	4.00
1912	2.66	3.06	2.75	2.62	2.71	2.78	2.70	3.12	4.00
1913	3.29	3.44	3.75	4.00	4.06	4.79	4.75	5.34	5.14
1914	2.38	2.22	2.78	3.12	2.80	2.91	2.84	3.56	3.65
1915	2.38	2.95	3.12	3.06	3.05	3.19	3.33	3.12	2.96
1916	3.30	3.38	4.18	4.60	5.00	5.38	5.91	5.53	5.28
1917	4.08	4.44	4.94	5.10	5.00	4.88	4.92	5.75	6.75
1918	5.38	6.03	5.98	6.31	6.50	7.88	9.55	10.00	10.80
1919	6.12	7.81	7.55	7.50	7.00	8.06	7.50	7.08	9.25
1920	4.86	5.23	5.66	4.71	4.80	5.01	6.01	6.79	8.03
1921	8.09	7.72	7.18	7.82	8.23	8.62	7.64	7.44	-------
1922	3.53	4.03	4.94	4.67	5.08	5.09	5.37	6.03	6.75
1923	5.16	4.80	4.58	4.71	4.46	4.59	4.50	4.82	4.29
1924	4.53	5.82	6.51	6.21	7.16	7.84	7.82	7.80	-------
1925	4.79	5.93	5.63	5.92	5.81	5.65	5.69	5.82	6.02
1926	3.54	4.88	3.96	4.46	-------	-------	-------	-------	-------

Division of Statistical and Historical Research. September, 1909, to May, 1920, compiled from the American Agriculturist, average of weekly range; subsequently compiled from Daily Market Report of Division of Fruits and Vegetables; simple average of daily range of selling prices. Since all varieties are included, these figures can be taken only as an index of the changes in the level of apple prices.

TABLE 134.—*Production and shipments of citrus fruits, by States, 1889, 1899, 1909, 1919–1926*

PRODUCTION [1]

[Thousand boxes—i. e., 000 omitted]

ORANGES [2]

State	1889 [3]	1899 [3]	1909 [3]	1919	1920	1921	1922	1923	1924	1925	1926 [4]
California	1,245	5,882	14,440	16,192	22,630	13,726	21,091	23,095	18,100	24,200	24,000
Florida	3,147	273	4,888	-------	-------	-------	-------	-------	-------	9,100	9,900
Arizona	-------	11	33	80	60	80	81	86	60	86	75
Alabama	-------	(5)	1	41	165	165	350	450	1	200	150
Louisiana	-------	1	152	37	42	50	60	75	75	100	125
Mississippi	-------	-------	5	31	25	30	45	55	0	27	42
Texas	-------	-------	11	9	-------	-------	4	6	12	10	20
GRAPEFRUIT											
California	-------	18	123	263	304	360	394	363	387	600	600
Florida	10	12	1,062	-------	-------	-------	-------	-------	-------	7,300	6,900
Mississippi	-------	-------	1	(5)	1	1	1	1	0	1	1
Arizona	-------	1	1	29	34	35	44	65	67	90	75
Louisiana	-------	-------	2	(5)	-------	-------	-------	-------	-------	-------	-------
Texas	-------	-------	(5)	3	-------	-------	35	65	211	200	340
California	306	874	2,756	3,049	5,255	4,172	3,492	6,840	5,125	7,136	7,200
Florida	253	2	12	32	-------	-------	-------	-------	-------	-------	-------
Arizona	-------	(5)	1	2	-------	-------	-------	-------	-------	-------	-------

[1] The figures in this table of production include fruit consumed on farms, sold locally, and used for manufacturing purposes, as well as that shipped. The figures do not include fruit which ripened on the trees but which was destroyed by freezing or storms prior to picking. For California the figures relate to the crop produced from the bloom of the year shown, fruiting through the winter and through the spring and summer of the following year, being picked from Nov. 1 of the year shown to Oct. 31 of the following year. Fruit not picked until after the latter date is included with the crop of the following year. For all States except California the estimates include all fruit picked after about Sept. 1 of the year shown.

[2] Including tangerines.

[3] Data from census reports.

[4] As estimated from prospects on Dec. 1.

[5] Less than 500 boxes.

TABLE 134.—*Production and shipments of citrus fruits, by States, 1889, 1899, 1909, 1919–1926*—Continued

ESTIMATED SHIPMENTS [6]

ORANGES [2]

State	1889	1899	1909	1919	1920	1921	1922	1923	1924	1925	1926 [4]
California						11,994	19,539	21,376	16,092	15,990	21,677
Florida				7,000	8,100	7,300	9,700	12,400	11,000	8,200	9,000

GRAPEFRUIT

State	1889	1899	1909	1919	1920	1921	1922	1923	1924	1925	1926 [4]
California				5,500	5,100	277	304	242	242	242	328
Florida						6,000	7,200	8,000	8,200	6,500	6,000

LEMONS

State	1889	1899	1909	1919	1920	1921	1922	1923	1924	1925	1926 [4]
California						3,854	3,346	4,969	4,493	4,424	5,128

Division of Crop and Livestock Estimates.

[2] Including tangerines.
[6] For California the figures represent the estimated quantities shipped by rail, including quantities moved in mixed cars or by express. For Florida the figures include also that part of the crop shipped or to be shipped by boat. For both States the figures relate to the crop from the bloom of the year shown, as explained in footnote 1.

TABLE 135.—*Number of orange, grapefruit, and lemon trees of bearing age, by States, for various periods* [1]

[Thousand trees—i. e., 000 omitted]

ORANGE [2]

State	1889 [3]	1899 [3]	1909 [3]	1919 [3]	1920 [4]	1921 [4]	1922 [4]	1923 [4]	1924 [4]	1925 [4]	1926 [4]
Florida	2,725	2,553	2,790	3,684	4,025	4,525	5,125	6,025	[3] 7,306	7,601	8,546
California	1,154	5,049	6,619	[4] 10,800	13,224	16,152	16,456	16,785	17,114		
Arizona		49	33	47	50	53	60	68	[3] 77		
Alabama		(5)	3	260	605	660	1,500	1,700	275	300	
Louisiana	6	141	267	104	111	119	128	138	[3] 151	153	163
Mississippi	(5)	4	10	[4] 30	32	34	50	60	25	40	53
Texas	(5)	1	42	14				145	165	190	

GRAPEFRUIT

State	1889 [3]	1899 [3]	1909 [3]	1919 [3]	1920 [4]	1921 [4]	1922 [4]	1923 [4]	1924 [4]	1925 [4]	1926 [4]
Florida	3	117	656	1,681	2,044	2,344	2,544	2,644	[3] 2,970	2,841	3,084
California	(5)	81	43	231	280	328	385	383	381		
Arizona		3	1	19	22	25			[3] 39		
Louisiana		1	3	(5)					[3] 7		
Mississippi			1	1	1	1	1	2	(5)	1	1
Texas		(5)	5	5				1,262	1,436	1,653	

LEMON

State	1889 [3]	1899 [3]	1909 [3]	1919 [3]	1920 [4]	1921 [4]	1922 [4]	1923 [4]	1924 [4]	1925 [4]	1926 [4]
Florida	85	23	12	31					[3] 84		
California	83	1,493	941	2,885	3,275	3,665	3,748	3,819	3,890		
Arizona		2	2	1					[3] 1	2	2
Louisiana		1	1	(5)					(5)		
Texas		(5)	1	1				43	[6] 49	57	

Division of Crops and Livestock Estimates.

[1] The figures shown are approximate only. They are intended to represent the numbers of citrus trees on farms and old enough to produce fruit in the year shown. The figures no doubt include some small trees producing a negligible quantity of fruit. The enumerators of the 1910 and 1920 censuses asked for orange trees and also for other subtropical fruits. In this table tangerine trees have been included with other orange trees. The enumerators of the 1925 census asked only for the number of orange trees, and the figures may include only part of the tangerine trees. In addition to the numbers shown there are in some sections a considerable number of trees on properties that were not listed as farms by the Census Bureau.
[2] Including tangerine trees.
[3] Data from census reports.
[4] From records of the Division of Crop and Livestock Estimates.
[5] Less than 500 trees.
[6] Report of 1925 census not yet available.

TABLE 136.—*Citrus fruits: Car-lot shipments by State of origin, September, 1920–September, 1926*

GRAPEFRUIT

State	Crop movement season [1]					
	1920	1921	1922	1923	1924	1925 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Florida	11,115	12,943	16,969	19,614	20,087	14,222
Texas		8	48	99	521	298
Arizona	48	62	108	155	159	218
California	463	475	552	439	435	543
Total	11,626	13,488	17,672	20,307	21,202	15,281

LEMONS

State	1920	1921	1922	1923	1924	1925 [2]
Texas				1	2	
Arizona			1	2	1	1
California	11,759	10,591	8,488	13,340	11,568	14,526
Total	11,759	10,591	8,489	13,343	11,571	14,527

ORANGES [3]

State	1920	1921	1922	1923	1924	1925 [2]
Florida	20,859	[4] 15,718	23,006	33,418	25,091	19,754
Alabama	87	145	476	600	2	338
Mississippi			9	13		8
Louisiana				3	2	1
Texas				3	3	6
Arizona	49	78	71	94	45	96
California	46,844	28,376	48,346	44,905	34,439	46,968
Total	67,839	44,317	71,903	79,036	59,582	67,171

TOTAL CITRUS FRUITS (GRAPEFRUIT, LEMONS, ORANGES [3])

State	1920	1921	1922	1923	1924	1925 [2]
Florida	31,974	28,661	39,975	53,032	45,178	33,976
Alabama	87	145	476	600	2	338
Mississippi			9	13		8
Louisiana				3	2	1
Texas		8	48	103	526	304
Arizona	97	140	175	251	205	315
California	59,066	39,442	57,386	58,684	46,442	62,037
Total	91,224	68,396	98,069	112,686	92,355	96,979

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from Sept. 1 of one year through September of the following year, except for oranges in California, where the season extends from Nov. 1 to October.

[2] Preliminary.

[3] Includes tangerines.

[4] Includes 1 car in August, 1921.

TABLE 137.—*Lemons: International trade, average 1911–1913, annual 1923–1925*

[Thousand boxes of 74 pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Italy	2	8,147	1	4,198	1	5,236	1	7,063
Spain		101	(1)	291	(1)	213	(1)	656
PRINCIPAL IMPORTING COUNTRIES								
Austria-Hungary	1,032	228						
Belgium [2]	763	(1)	920	3	1,058	7	804	3
Czechoslovakia			237	(1)	295	(1)	408	
Denmark	26		32		36		42	
Germany	[3] 1,107	(4)	387	(4)	1,201	(4)	1,531	(4)
Hungary			54	(1)	113	(1)	131	(1)
Irish Free State					30		33	
Netherlands	94	3	158	11	178	18	179	18
New Zealand	10		15		13	(1)	15	
Poland					248	1	293	(1)
Rumania	123	(1)	168	(1)	183	(1)	198	(1)
Sweden	24		31		34		40	
Switzerland	(1)		126		120		140	
United Kingdom	[5] 1,116		1,393		[5] 1,781		1,894	
United States	[3] 1,750	[6] 66	1,702	182	634	228	1,572	162
Other countries			113	4	142	8	153	29
Total	6,047	8,546	5,337	4,689	6,067	5,711	7,434	7,931

Division of Statistical and Historical Research. Official sources.

[1] Less than 500 boxes.
[2] Lemons, oranges, citrons, etc.
[3] Two-year average.
[4] Not separately stated.
[5] Includes limes and grapefruit.
[6] One year only.

TABLE 138.—*Oranges: International trade, average 1911–1913, annual 1923–1925*

[Thousand boxes of 78 pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Brazil		2		406		448		490
China	(1)	(1)	(1)	236	253	384	359	233
Cuba		111		259		270		
Greece [2]		42		68		70		
Italy	3	3,476	(3)	2,299	(3)	3,485	1	4,074
Japan		353		370		277		369
Palestine				[4] 321		1,781		1,848
Spain		14,830	1	13,030	(3)	18,958	(3)	19,855
Union of South Africa		(5)		359		399		660
United States	[6] 73	1,154	[7] 93	2,294	15	2,564	14	1,981

[1] Not separately stated.
[2] Includes lemons.
[3] Less than 500 boxes.
[4] Six months.
[5] Expressed in value only.
[6] Two-year average.
[7] Includes limes.

TABLE 138.—*Oranges: International trade, average 1911–1913, annual 1923–1925*—Continued

[Thousand boxes of 78 pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL IMPORTING COUNTRIES								
Austria-Hungary	2.110	102	-------	-------	-------	-------	-------	-------
Czechoslovakia	-------	-------	107	(3)	120	(3)	430	-------
Denmark	97	-------	258	-------	238	-------	230	-------
Egypt	(1)	-------	611	5	502	4	501	3
France [2]	3,198	38	3,780	61	4,186	152	3,871	122
Germany	3,935	(1)	384	(1)	4,425	(1)	5,899	(1)
Hungary	-------	-------	-------	-------	52	(2)	236	(2)
Irish Free State	-------	-------	-------	-------	245	-------	234	-------
Netherlands	631	9	1,264	67	2,109	779	1,850	561
New Zealand	(1)	-------	48	-------	53	-------	73	-------
Norway [2]	208	-------	379	-------	297	-------	338	-------
Poland	-------	-------	-------	-------	635	(3)	638	(3)
Rumania	143	(3)	84	(3)	124	(3)	103	1
Sweden	166	-------	247	(3)	231	(3)	267	-------
Switzerland	372	-------	341	-------	367	-------	374	(3)
United Kingdom	7,638	-------	10,714	-------	10,395	-------	10,788	-------
Other countries	-------	-------	91	7	105	28	185	547
Total	18,574	20,117	18,402	19,782	21,352	29,599	26,391	30,753

Division of Statistical and Historical Researcs. Official sources.

[1] Not separately stated. [2] Includes lemons. [3] Less than 500 boxes.

TABLE 139.—*Grapefruit, Florida: Average auction price per box at New York, 1919–1926*

Season beginning October	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1919	3.72	3.67	3.29	3.16	3.28	3.60	4.05	5.02	[1] 2.61	[1] 6.20	[2] 3.70
1920	5.31	4.71	3.92	4.86	4.30	4.71	4.55	4.54	4.21	[1] 4.33	[2] 4.55
1921	3.37	3.52	3.86	3.47	3.78	3.91	4.46	5.20	6.18	[1] 5.22	[2] 4.03
1922	3.75	3.84	4.00	3.73	3.96	3.63	3.98	3.48	3.26	2.96	3.70
1923	2.89	2.80	2.91	3.00	2.86	3.15	3.02	3.45	2.72	3.06	2.98
1924	4.19	2.99	2.39	2.94	3.00	2.90	4.04	4.50	5.99	-------	3.38
1925	4.93	3.95	4.03	4.05	4.07	4.78	5.37	5.07	4.85	6.06	4.50
1926	[1] 5.21	4.20	3.57	-------	-------	-------	-------	-------	-------	-------	-------

Division of Statistical and Historical Research. Compiled from New York Daily Fruit Reporter.

Monthly average obtained by taking simple average of reported averages of all sales of "golden" grade. Includes all sizes. Yearly average weighted by number of sales reported during each month.

[1] Ten sales or less during month.
[2] See footnotes to figures used in obtaining this average.

TABLE 140.—*Lemons, California: Average auction price per box at New York, 1919–1926*

Season beginning October	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1919	7.33	3.79	2.45	2.25	6.00	3.81	3.76	3.12	2.60	1.87	3.18	2.61	3.59
1920	4.73	2.78	3.04	3.39	4.11	3.14	2.91	3.82	8.17	8.99	3.72	5.87	4.64
1921	4.96	3.40	4.34	4.79	4.68	4.15	3.84	4.95	4.50	3.45	4.37	8.52	4.38
1922	8.51	7.44	5.61	5.01	5.42	4.20	4.79	6.12	7.92	6.07	7.68	7.28	6.25
1923	4.40	3.31	3.42	3.01	3.37	3.37	3.51	3.18	3.40	2.80	4.80	4.65	3.56
1924	4.90	6.80	4.65	4.45	4.30	4.51	4.76	5.71	6.52	4.48	4.50	8.87	5.36
1925	6.73	4.10	4.37	3.86	4.10	5.45	4.14	4.79	3.76	4.70	4.17	3.60	4.51
1926	4.46	3.86	4.08	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Division of Statistical and Historical Research. Compiled from New York Daily Fruit Reporter.
Monthly average obtained by taking simple average of reported averages of all sales. Includes all sizes and grades. Yearly average weighted by number of sales reported during each month.

TABLE 141.—*Oranges, California navel: Average auction price per box of certain brands at New York, 1919–1926*

Season beginning December	December	January	February	March	April	May	June	Average
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
1919	5.80	[1] 5.98	[1] 6.39	5.13	7.10	5.71	4.76	[2] 5.70
1920	5.79	4.96	3.56	4.20	4.41	5.01	5.71	4.63
1921	6.46	4.64	[1] 4.81	6.51	[1] 6.97	[1] 6.78	----------	[2] 6.07
1922	5.00	4.34	4.17	3.91	4.60	4.61	4.67	4.45
1923	4.44	3.50	3.50	3.23	4.05	3.49	[1] 4.35	[2] 3.67
1924	4.71	5.32	4.98	5.76	5.72	7.05	6.74	5.94
1925 [3]	4.67	[1] 5.08	4.69	4.77	5.74	4.98	----------	5.23
1926	5.50	----------	----------	----------	----------	----------	----------	----------

Division of Statistical and Historical Research. Compiled from New York Daily Fruit Reporter.
Monthly average obtained by taking simple average of reported averages of all sales of the following-named brands: Paul Neyron, Golden Cross, Glendora Heights, Pinnacle, Earlibest, and Big Tree. Includes all sizes Yearly average weighted by number of sales reported during each month.

[1] Ten sales or less during month.
[2] See footnotes to figures used in obtaining this average.
[3] In 1925 the season began in November, with an average price of $7.03.

TABLE 142.—*Oranges, California Valencia: Average auction price per box of certain brands at New York, 1919–1926*

Season beginning May	May	June	July	August	September	October	November	December	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1919	[1] 6.03	5.56	5.49	5.90	5.91	6.63	5.56	5.24	[2] 5.69
1920	4.91	6.52	7.05	7.57	7.88	7.91	9.22	[1] 8.67	[2] 7.56
1921	5.08	5.76	5.35	6.24	6.23	6.82	6.31	---------	6.09
1922	7.86	8.42	9.33	8.95	9.09	8.45	5.04	[1] 5.90	[2] 8.13
1923	4.81	5.65	4.77	4.45	5.56	5.87	6.89	---------	5.36
1924	4.34	4.97	4.57	5.81	5.92	6.64	6.53	[1] 5.19	[2] 5.70
1925	7.36	8.28	7.41	7.51	8.55	9.58	---------	---------	8.12
1926	4.74	4.71	5.31	5.32	6.09	6.93	7.50	---------	5.80

Division of Statistical and Historical Research. Compiled from New York Daily Fruit Reporter.
Monthly average obtained by taking simple average of reported averages of all sales of the following-named brands: Carmencita, Shamrock, Bird Rocks, Bowman, Advance, and Premium. Includes all sizes. Yearly average weighted by number of sales reported during each month.

[1] Ten sales or less during month. [2] See footnotes to figures used in obtaining this average.

TABLE 143.—*Oranges, Florida: Average auction price per box at New York, 1919–1926*

Season beginning October	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1919	[1] 3.16	2.80	3.95	4.22	6.43	6.63	9.40	8.32			[2] 5.91
1920	[1] 5.47	4.65	3.17	4.37	3.94	4.20	4.82	5.56	[1] 4.88	[1] 3.51	[2] 4.17
1921	3.06	4.18	4.29	3.95	4.85	6.68	7.15	8.06	8.99	[1] 9.79	[2] 4.44
1922	3.69	3.88	4.08	4.53	4.34	4.72	5.67	5.47	4.45	3.90	4.65
1923	[1] 3.11	3.55	2.68	2.84	3.02	3.16	3.51	3.85	4.88	[1] 4.81	[2] 3.27
1924		3.63	3.57	3.68	4.43	5.87	6.43	7.76	8.44		4.89
1925	7.80	6.80	4.00	4.23	4.41	4.95	5.82	5.91	6.54	[1] 7.45	5.07
1926	3.51	4.78	3.49								

Division of Statistical and Historical Research. Compiled from New York Daily Fruit Reporter.

Monthly average obtained by taking simple average of reported averages of all sales of "golden" grade. Includes all sizes. Yearly average weighted by number of sales reported during each month.

[1] Ten sales or less during month. [2] See footnotes to figures used in obtaining this average.

CRANBERRIES

TABLE 144.—*Cranberries: Production and farm value, United States, 1914–1926*

Year	Production, thousands of barrels	Price per barrel received by producers, Dec. 1	Farm value, thousands of dollars	Year	Production, thousands of barrels	Price per barrel received by producers, Dec. 1	Farm value, thousands of dollars
1914	697	$3.97	2,766	1921	384	$16.99	6,526
1915	441	6.59	2,908	1922	560	10.18	5,702
1916	471	7.32	3,449	1923	652	7.15	4,664
1917	249	10.24	2,550	1924	582	9.42	5,485
1918	352	10.77	3,791	1925	569	11.20	6,370
1919	549	8.37	4,597	1926 [1]	720	6.75	4,862
1920	449	12.28	5,514				

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 145.—*Cranberries: Production and December 1 price, by States, 1923–1926*

State	Production				Price per barrel received by producers, Dec. 1			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926
	1,000 barrels	*1,000 barrels*	*1,000 barrels*	*1,000 barrels*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Massachusetts	410	325	429	430	6.50	9.90	11.25	6.40
New Jersey	205	215	115	210	8.00	8.75	10.75	7.00
Wisconsin	37	42	25	80	9.70	9.20	12.30	8.00
United States	652	582	569	720	7.15	9.42	11.20	6.75

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 146.—*Grapes: Estimated production, by States, 1924–1926*

State	1924	1925	1926 [1]	State	1924	1925	1926 [1]
	Tons	*Tons*	*Tons*		*Tons*	*Tons*	*Tons*
Maine	38	48	49	North Carolina	6,600	4,950	6,840
New Hampshire	84	95	96	South Carolina	1,425	1,078	1,785
Vermont	37	49	36	Georgia	1,638	1,470	1,892
Massachusetts	440	473	616	Florida			700
Rhode Island	289	300	212	Kentucky	1,094	972	1,274
Connecticut	1,075	1,063	1,275	Tennessee	1,496	1,278	1,672
New York	80,000	51,840	106,700	Alabama	825	880	913
New Jersey	2,338	2,200	2,820	Mississippi	281	285	300
Pennsylvania	19,750	11,180	25,110	Arkansas	3,000	4,400	13,000
Ohio	20,400	13,750	29,100	Louisiana	36	42	42
Indiana	3,185	2,450	4,606	Oklahoma	1,875	1,750	1,800
Illinois	4,900	3,360	6,532	Texas	1,320	940	1,200
Michigan	64,000	22,100	60,900	Idaho	240	270	300
Wisconsin	279	248	409	Colorado	28[illegible]	260	320
Minnesota	88	30	85	New Mexico	[illegible]20	475	531
Iowa	4,658	2,835	6,052	Arizona	350	419	604
Missouri	5,840	7,300	12,880	Utah	1,000	1,000	1,300
Nebraska	1,068	770	1,584	Nevada	225	240	230
Kansas	2,925	2,216	3,700	Washington	1,732	3,100	2,500
Delaware	1,400	1,275	1,536	Oregon	1,333	1,500	1,800
Maryland	770	781	1,330	California	1,535,000	1,912,000	2,040,000
Virginia	2,349	1,653	2,790				
West Virginia	1,539	760	1,696	United States	1,777,722	2,064,085	2,349,117

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 147.—*Grapes: Car-lot shipments, by State of origin, June, 1920, to December, 1926*

State	Crop movement season [1]						
	1920	1921	1922	1923	1924	1925	1926 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	5,904	2,535	7,720	4,312	5,641	3,763	7,002
Pennsylvania	1,223	390	1,558	847	1,166	589	1,355
Ohio	62	72	80	92	29	19	101
Michigan	5,046	1,292	6,020	4,202	4,680	398	3,012
Iowa	104	77	237	217	79	50	161
Missouri	27	4	128	58	101	166	759
Washington	8	64	47	62	83	191	121
California [3]	28,832	33,344	43,952	55,348	57,695	76,066	63,531
Other States	104	39	177	198	459	636	1,525
Total [3]	41,310	37,817	59,919	65,336	69,933	81,878	77,567

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from June 1 through December of a given year.
[2] Preliminary.
[3] Figures for California include shipments in January of succeeding crop years as follows: 1920, 1 car; 1921, 2 cars; 1922, 7 cars; 1923, 13 cars; 1924, 8 cars, 1925, 21 cars, 1926, 3 cars.

TABLE 148.—*Olive oil (including inedible): International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913[1]		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Algeria	[2] 974	[2] 11,566	171	24,516	167	28,654	153	25,254
Greece		22,272	77	8,528	165	19,649		
Italy	[2] 6,643	75,130	1,110	97,628	335	93,730	644	94,901
Morocco	267	375	494	2	300	5,633	219	57
Portugal	[2] 2,020	[2] 5,492	4,033	1,678	1,240	2,609	[3 4] 1,882	[3 4] 3,183
Spain	30	86,454	1	125,463	1	101,695	3	112,990
Tunis	2,020	18,090	[3] 782	[3] 24,036	4,267	19,638	3,694	37,071
Yugoslavia [3]			1,605	4,565	1,222	1,310	1,614	455
PRINCIPAL IMPORTING COUNTRIES								
Argentina	48,248		[3] 64,399		[3] 64,639		[3] 79,706	
Australia	510	11	[5] 1,034	([5 6])	[5] 1,223	([5 6])	[3] 1,246	
Belgium	[2] 4,295	[2] 582	2,505	123	2,079	35	1,829	51
Brazil	8,409		6,303	1	7,496	([6])	13,298	
Bulgaria	4,003	7	3,047	([6])	2,096		2,491	
Canada	1,593		2,188		2,528		2,378	
Chile	7,255		10,350		8,733		[3] 9,391	
Cuba			17,647		16,035			
Czechoslovakia			596	2	801	[3] 37	1,691	[3] 17
Denmark	146		173	18	135	10	[3] 152	[3] 6
Egypt	4,803		3,357	79	3,043	28	3,344	34
France	[2] 42,502	12,935	46,079	12,129	38,459	12,759	41,152	9,905
Germany	6,085		937	13	2,060	44	3,362	35
Japan	126		250		227		314	
Macao (Portuguese China) [3]			5,687	4,234	4,732	4,470		
Netherlands	[2] 282	[2] 205	260	13	174	22	190	9
New Zealand	68		148		136		150	
Norway	3,458	33	4,210		9,878		4,717	
Palestine			[3] 3,565	[3] 298	3,126	236	5,039	248
Peru	[2] 684	[2] 77	1,073		901	([6])	1,011	
Philippine Islands	360		214		276		266	
Rumania	7,328		2,156	([6])	1,549	1	2,016	([6])
Sweden	889	2	465	3	400	([6])	[4] 498	3
Switzerland	4,138	71	3,084	[3] 30	3,295	[3] 36	3,542	([6])
United Kingdom	22,950	823	17,853	367	18,872	302	17,270	291
United States	39,903		117,705		108,104		142,133	
Uruguay	4,249		[7] 8,825		10,040		12,739	
Other countries	40,415	24,633	11,482	6,865	12,145	422	13,815	1,041
Total	264,653	258,758	343,955	310,591	331,479	291,320	371,949	285,551

Division of Statistical and Historical Research. Official sources except where otherwise noted. Conversions made on the basis of 7.5 pounds to the gallon.

[1] International Institute of Agriculture, Oleaginous Products and Vegetable Oils.
[2] Four-year average.
[3] International Yearbook of Agricultural Statistics.
[4] Nine months.
[5] Year beginning July 1.
[6] Less than 500 pounds.
[7] Eleven months.

TABLE 149.—*Peaches: Production, United States, 1909–1926*

Year	Production	Year	Production	Year	Production
	Bushels		*Bushels*		*Bushels*
1909	*35,470,000*	1915	64,097,000	1921	32,602,000
1910	48,171,000	1916	37,505,000	1922	55,852,000
1911	34,880,000	1917	48,765,000	1923	45,382,000
1912	52,343,000	1918	33,094,000	1924	53,848,000
1913	39,707,000	1919	53,178,000	1925	46,582,000
1914	54,109,000	1920	45,620,000	1926 [1]	68,425,000

Division of Crop and Livestock Estimates. Census figures in italics.

[1] Preliminary.

TABLE 150.—*Peaches: Production, by States, 1922–1926*

[Thousand bushels—i. e., 000 omitted]

State	1922	1923	1924	1925	1926 [1]	State	1922	1923	1924	1925	1926 [1]
N. H.	32	40	....	34	29	Ga.	4,900	5,248	8,342	7,304	9,400
Mass.	200	205	40	218	213	Fla.	130	120	127	115	125
R. I.	28	31	29	30	37	Ky.	1,218	450	1,250	570	1,110
Conn.	262	232	220	210	255	Tenn.	2,002	460	2,450	1,415	1,800
N. Y.	3,400	1,700	2,178	1,920	2,300	Ala.	810	779	1,230	1,312	1,159
N. J.	2,000	2,642	2,500	1,740	3,000	Miss.	375	260	700	712	551
Pa.	1,560	1,907	1,715	600	2,498	Ark.	2,040	1,110	2,700	2,200	2,400
Ohio	1,584	1,386	800	1,100	2,120	La.	180	175	230	275	228
Ind.	650	445	240	320	900	Okla.	2,070	1,032	1,861	950	180
Ill.	1,100	675	700	560	2,660	Tex.	1,920	1,700	1,900	1,750	2,310
Mich.	1,440	1,125	464	592	1,564	Idaho	244	282	102	23	297
Iowa	200	40	3	12	97	Colo.	900	750	920	450	976
Mo.	2,300	1,040	860	870	1,722	N. Mex.	98	189	62	156	131
Nebr.	81	45	2	33	50	Ariz.	128	7[illegible]	40	65	91
Kans.	630	78	231	371	266	Utah	885	802	750	100	550
Del.	320	225	400	155	450	Nev.	6	5	2	8	8
Md.	495	631	600	240	700	Wash.	950	1,333	460	870	1,222
Va.	764	504	1,500	362	1,176	Oreg.	300	500	189	222	384
W. Va.	715	526	1,000	190	1,000	Calif.	17,080	15,830	13,751	16,418	21,252
N. C.	1,010	260	2,500	1,500	2,100						
S. C.	845	550	800	740	1,054	U. S.	55,852	45,382	53,848	46,562	68,425

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 151.—*Peaches: Carlot shipments by State of origin, May, 1920–October, 1926*

State	Crop movement season [1]						
	1920	1921	1922	1923	1924	1925	1926, preliminary
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	4,635	2,967	6,862	2,777	[2] 3,436	3,055	[3] 2,370
New Jersey	1,022	5	1,595	1,790	1,461	1,047	1,091
Pennsylvania	397	59	268	615	448	204	817
Ohio	1,025	88	620	625	14	516	433
Indiana	120	39	364	236	25	18	408
Illinois	557	35	1,683	390	860	579	2,970
Michigan	[4] 2,358	176	1,650	1,087	105	264	655
Delaware	168	2	422	258	635	148	617
Maryland	488	1	422	804	637	70	653
Virginia	280	....	266	69	530	39	376
West Virginia	436	....	19	170	326	2	346
North Carolina	379	594	1,452	215	1,657	2,024	2,114
Georgia	5,987	10,330	7,370	8,701	13,504	13,513	17,988
Tennessee	154	217	248	53	752	605	1,769
Arkansas	56	607	1,563	724	2,785	2,300	2,424
Oklahoma	....	28	155	93	336	113	18
Texas	76	1,024	32	102	763	1,070	962
Idaho	189	105	124	392	17	2	79
Colorado	1,091	1,223	1,428	1,254	1,772	834	1,272
Utah	366	805	1,261	1,203	1,109	94	754
Washington	221	1,117	990	1,645	412	991	1,422
California	7,889	7,676	9,139	10,212	7,264	12,785	17,179
Other States	285	236	472	110	517	572	998
Total	[4] 28,179	27,334	38,405	33,525	[2] 30,395	40,845	[3] 57,715

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in carlots include those by boat reduced to carlot basis.

[1] Crop movement season extends from May 1 through October of a given year.
[2] Includes one car in November.
[3] Includes four cars in November.
[4] Includes three cars in November.

Table 152.—*Peaches: Car-lot shipments by State of origin, 1920–1926*

State and year	Crop movement season [1]						
	May	June	July	Aug.	Sept.	Oct.	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York:							
1920				15	3,452	1,168	4,635
1921			4	1,712	1,233	18	2,967
1922			3	106	5,953	800	6,862
1923				10	2,166	601	2,777
1924				1	2,312	[2] 1,123	[2] 3,436
1925				38	2,832	185	3,055
1926 [3]					1,471	[4] 899	[4] 2,370
New Jersey:							
1920			27	526	469		1,022
1921			1	4			5
1922			234	1,341	20		1,595
1923			85	1,285	420		1,790
1924			21	504	913	23	1,461
1925			77	909	61		1,047
1926 [3]			18	359	713	1	1,091
Michigan:							
1920				37	2,175	[5] 146	[5] 2,358
1921				105	71		176
1922			3	850	775	22	1,650
1923				28	1,049	10	1,087
1924				3	55	47	105
1925				14	243	7	264
1926 [3]				5	601	49	655
Georgia:							
1920	64	1,807	3,948	166	2		5,987
1921	1,286	3,630	5,399	15			10,330
1922	682	3,003	3,682	3			7,370
1923	1	2,238	5,898	564			8,701
1924	25	1,714	10,418	1,331	13	3	13,504
1925	312	4,567	8,475	152	7		13,513
1926 [3]	39	1,896	12,358	3,692	3		17,988
Arkansas:							
1920		4	31	21			56
1921	2	9	574	22			607
1922		5	1,306	252			1,563
1923		2	198	524			724
1924		9	319	2,456	1		2,785
1925		1	2,118	181			2,300
1926 [3]			1,067	1,357			2,424
Texas:							
1920			76				76
1921		219	802	3			1,024
1922		5	27				32
1923			47	55			102
1924			456	307			763
1925	2	20	1,031	17			1,070
1926 [3]		6	951	5			962
Colorado.							
1920				62	1,025	4	1,091
1921				559	658	6	1,223
1922				455	965	8	1,428
1923				572	681	1	1,254
1924				484	1,282	6	1,772
1925			3	532	299		834
1926 [3]			7	862	401	2	1,272
Utah:							
1920					366		366
1921				230	573	2	805
1922				5	1,256		1,261
1923					1,203		1,203
1924		1		264	844		1,109
1925		7	4	56	27		94
1926 [3]			2	637	115		754
Washington:							
1920			6	26	187	2	221
1921			7	415	689	6	1,117
1922				159	823	8	990
1923			3	802	822	18	1,645
1924			6	341	65		412
1925			18	769	200	4	991
1926 [3]			16	1,280	125	1	1,422

[1] Crop movement season extends from May 1 through October of a given year.
[2] Includes one car in November.
[3] Preliminary.
[4] Includes 4 cars in November.
[5] Includes 3 cars in November.

TABLE 152.—*Peaches: Car-lot shipments by State of origin, 1920–1926*—Contd.

State and year	Crop movement season						
	May	June	July	Aug.	Sept.	Oct.	Total
California:	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
1920	2	210	2,736	3,332	1,601	8	7,889
1921		44	1,970	4,075	1,582	5	7,676
1922		64	138	5,300	3,353	284	9,139
1923		110	4,473	3,875	1,705	49	10,212
1924	3	65	2,720	3,276	1,157	43	7,264
1925		102	4,205	5,194	3,280	4	12,785
1926 [3]	13	151	6,170	8,155	2,671	19	17,179
Other States:							
1920		77	378	2,141	1,606	276	4,478
1921	37	103	787	241	229	7	1,404
1922	13	112	2,205	3,457	634	94	6,515
1923		34	259	2,042	1,608	87	4,030
1924		84	659	4,716	1,2[illegible]	78	6,784
1925	14	254	1,995	2,052	471	106	4,892
1926 [3]		156	1,017	7,848	2,504	73	11,598
Total:							
1920	66	2,098	7,202	6,326	10,883	[5] 1,604	[5] 28,179
1921	1,325	4,005	9,544	7,381	5,035	44	27,334
1922	695	3,189	7,598	11,928	13,779	1,216	38,406
1923	1	2,384	10,963	9,757	9,654	766	33,525
1924	28	1,873	14,599	13,683	7,889	[2] 1,323	[2] 30,395
1925	328	4,951	17,926	9,914	7,420	306	40,845
1926 [3]	52	2,209	21,606	24,200	8,604	[4] 1,044	[4] 57,715

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[2] Includes one car in November.
[3] Preliminary.
[4] Includes 4 cars in November.
[5] Includes 3 cars in November.

TABLE 153.—*Peaches: Average l. c. l. price to jobbers at nine markets*

Market. Season beginning May	Six-basket carrier			Bushel basket				
	June [1]	July	Aug. [2]	June [1]	July	Aug. [2]	Sept.	Oct. [2]
New York:	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
1921	3.34	3.04	5.00		2.62			
1922	3.05	2.57	2.16		2.20	1.90	1.78	1.43
1923	3.31	2.10	2.03		2.18	2.16	2.48	1.94
1924	2.97	2.25	2.31		1.74	2.18	2.09	2.46
1925	3.43	2.24	2.23	3.38	2.22	2.18	2.74	2.46
1926	3.14	1.79	1.28	3.05	1.74	1.48	1.26	1.17
Chicago:								
1921	2.47	2.95	4.23	2.74	3.20			
1922	2.72	2.65		2.76	2.51	1.91	1.70	1.38
1923	2.79	2.39	2.56		2.76	3.06	2.11	2.25
1924	1.98	1.88	2.07	1.84	1.86	2.30	2.91	2.17
1925	3.11	2.35	3.01	3.08	2.45	3.16	2.72	2.38
1926	3.02	1.96	1.53	2.44	2.02	1.79	1.76	1.44
1926:								
Philadelphia	3.32	2.01	1.98		1.78	1.92		1.10
Pittsburgh		1.98			2.19	1.94	1.55	1.21
St. Louis	2.38	1.95		3.41	2.09	1.82	2.10	1.78
Cincinnati	2.74			2.47	1.82	1.71	1.70	1.41
Minneapolis							2.42	
Kansas City		2.28			2.12	2.10	2.22	2.01
Washington		2.06	1.72		2.18	1.80	1.67	1.63

Division of Statistical and Historical Research. Compiled from Daily Market Report of the Division of Fruits and Vegetables.

Average prices as shown are based on stock of good merchantable quality and condition; they are simple averages of daily range of selling prices.

Earlier data for cities showing prices for 1926 only are available in 1925 Yearbook, p. 882, Table 206.

[1] Quotations began June 3, 1921; May 25, 1922; June 5, 1923; June 3, 1924; June 1, 1925; June 7, 1926.
[2] Last reported quotations of season Aug. 9, 1921; Oct. 11, 1922; Oct. 13, 1923 and 1924; Oct. 3, 1925, Oct. 21, 1926.

TABLE 154.—*Pears: Production, United States, 1909–1926*

Year	Production	Year	Production	Year	Production
	Bushels		*Bushels*		*Bushels*
1909	*8,841,000*	1915	11,216,000	1921	11,297,000
1910	10,431,000	1916	11,874,000	1922	20,705,000
1911	11,450,000	1917	13,281,000	1923	17,845,000
1912	11,843,000	1918	13,362,000	1924	18,866,000
1913	10,108,000	1919	15,006,000	1925	20,720,000
1914	12,086,000	1920	16,805,000	1926 [1]	25,644,000

Division of Crop and Livestock Estimates. Census figures in italics.

[1] Preliminary.

TABLE 155.—*Pears: Production, by States, 1922–1926*

[Thousand bushels—i. e., 000 omitted]

State	1922	1923	1924	1925	1926 [1]	State	1922	1923	1924	1925	1926 [1]
Me.	14	7	12	13	6	S. C.	104	88	114	87	133
N. H.	24	12	17	19	10	Ga.	202	192	232	155	257
Vt.	10	6	12	12	6	Fla.	50	35	55	54	66
Mass.	84	58	84	90	60	Ky.	150	70	117	85	144
R. I.	12	10	12	13	12	Tenn.	180	83	250	148	266
Conn.	60	37	62	60	57	Ala.	176	174	224	157	211
N. Y.	3,200	1,000	2,100	3,045	2,088	Miss.	190	90	187	189	189
N. J.	405	662	624	512	645	Ark.	100	45	124	89	116
Pa.	576	612	629	468	748	La.	48	45	65	74	71
Ohio	450	332	326	354	430	Okla.	197	100	235	146	81
Ind.	300	334	180	209	328						
						Tex.	390	340	483	386	580
Ill.	510	307	500	540	818	Mont.	8	8	----	----	3
Mich.	1,500	1,005	810	450	889	Idaho.	72	72	60	39	68
Wis.	19	16	15	15	17	Colo.	519	400	550	510	564
Iowa	75	62	40	45	68	N. Mex.	18	49	28	56	42
Mo.	450	475	375	342	473						
Nebr.	27	24	30	18	29	Ariz.	18	18	11	11	15
						Utah	98	64	70	25	80
Kans.	243	134	262	165	186	Nev.	4	7	4	7	6
Del.	158	370	328	180	388	Wash.	1,740	2,700	1,750	2,300	3,220
Md.	256	374	335	280	394	Oreg.	1,400	1,580	1,225	1,500	2,100
Va.	270	200	430	135	410	Calif.	6,250	5,542	5,542	7,542	9,000
W. Va.	38	41	84	34	109						
N. C.	110	65	273	158	270	U. S.	20,705	17,845	18,866	20,720	25,614

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 156.—*Pears: Car-lot shipments, by State of origin, June, 1920–May, 1926*

State	Crop movement season [1]					
	1920	1921	1922	1923	1924	1925 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	3,979	2,893	5,461	1,701	2,978	4,510
New Jersey	74	23	40	76	60	52
Ohio	64	17	96	33	47	62
Indiana	71	----	44	39	61	59
Illinois	1,179	33	468	318	595	614
Michigan	1,264	653	1,860	543	394	151
Delaware	290	----	151	541	273	128
Maryland	54	3	36	63	30	29
Texas	98	115	50	99	129	121
Colorado	654	745	774	696	955	717
Utah	88	33	82	65	81	29
Washington	1,902	2,903	2.678	4,274	2,456	3,560
Oregon	1,006	985	1,862	2,575	1,483	2,225
California	5,616	4,500	6,465	7,143	6,312	8,718
Other States	202	150	314	423	392	282
Total	15,941	13,053	20,381	18,589	16,246	21,257

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from June 1 of one year through May of the following year.
[2] Preliminary.

TABLE 157.—*Pears: Estimated price per bushel received by producers, United States, 1910–1926*

Year	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Weighted average.	Year	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Weighted average.
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1910	------	100.9	98.6	100.8	122.4	100.9	1919	188.4	183.0	181.3	182.0	219.5	185.7
1911	118.0	103.8	97.2	85.1	111.0	109.4	1920	195.5	197.9	184.2	170.1	164.5	194.1
1912	106.3	100.0	83.1	79.3	92.8	100.4	1921	165.2	175.1	186.4	194.9	198.7	172.2
1913	109.9	119.3	95.6	93.0	97.9	111.2	1922	147.1	------	116.2	119.8	118.7	139.7
1914	98.8	92.8	80.4	77.5	82.5	93.7	1923	168.3	172.5	165.1	150.2	133.0	165.5
1915	80.8	83.8	82.7	89.8	89.7	82.5	1924	175.2	157.8	155.0	141.0	------	165.4
1916	109.0	102.7	96.9	93.3	105.6	104.8	1925	172.6	165.2	164.2	149.7	162.6	168.2
1917	132.2	125.0	118.2	116.1	------	127.4	1926	137.5	119.2	117.2	105.6	97.1	127.0
1918	168.4	157.8	147.5	140.1	156.6	161.1							

Division of Crop and Livestock Estimates.

TABLE 158.—*Strawberries, commercial crop: Acreage, production, and price per quart, by States, 1924–1926*

State	Acreage			Production			Price per quart [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
Early:	*Acres*	*Acres*	*Acres*	*1,000 quarts*	*1,000 quarts*	*1,000 quarts*	*Cents*	*Cents*	*Cents*
Alabama	3,960	3,440	3,620	5,544	5,504	4,898	13	16	18
Florida	4,690	4,240	2,980	8,676	8,056	5,513	27	26	35
Louisiana	14,600	10,340	18,500	17,885	10,340	24,975	27	33	29
Mississippi	1,190	1,160	920	1,428	1,276	1,104	18	19	27
Texas	1,070	980	1,080	1,284	1,078	1,642	18	18	29
Second early:									
Arkansas	15,200	11,550	12,680	22,800	8,085	19,781	14	16	19
California (southern district)	1,970	1,150	820	12,895	5,060	3,317	12	19	18
North Carolina	5,690	5,040	5,040	15,363	12,096	10,821	13	14	16
South Carolina	540	430	300	1,210	1,032	600	11	15	16
Tennessee	21,170	16,160	11,000	28,452	19,392	13,750	13	14	18
Virginia	10,700	8,600	8,000	22,470	24,080	19,360	14	13	15
Intermediate:									
California (other)	1,770	2,020	2,090	5,499	10,100	8,747	17	23	20
Delaware	4,900	2,600	3,200	11,760	4,160	7,200	9	15	13
Illinois	3,590	3,330	3,060	7,180	4,662	3,461	11	17	12
Indiana	2,020	1,540	1,650	4,040	1,848	3,135	12	17	13
Iowa	2,960	2,760	2,850	5,032	3,588	3,819	14	20	12
Kansas	920	950	960	2,024	1,140	1,435	10	18	17
Kentucky	4,370	3,980	4,470	5,454	3,184	7,621	15	19	13
Maryland	11,080	9,100	10,650	24,376	17,290	34,080	9	16	15
Missouri	11,000	13,000	16,000	17,600	27,300	23,232	14	19	12
New Jersey	6,500	5,500	5,500	14,560	5,280	10,560	11	14	15
Late:									
Michigan	6,140	5,100	4,960	12,280	2,580	7,619	12	18	13
New York	3,940	3,850	3,850	8,274	11,935	9,571	13	18	19
Ohio	2,660	2,600	2,520	5,320	2,340	6,380	13	24	16
Oregon	3,640	3,460	3,560	5,824	7,612	6,209	15	12	11
Pennsylvania	3,250	3,100	3,100	5,200	3,720	4,650	18	21	18
Washington	5,420	5,370	5,800	9,756	7,518	10,788	13	20	16
Wisconsin	1,310	1,140	1,140	2,620	1,140	2,223	10	18	18
Total or average	156,250	132,550	140,300	284,716	211,396	266,411	14	18	17

Division of Crop and Livestock Estimates.

[1] Average for season.

TABLE 159.—*Strawberries: Car-lot shipments by State of origin, 1920–1926*

State	1920	1921	1922	1923	1924	1925	1926 [1]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	257	243	325	301	345	200	238
New Jersey	363	363	274	187	402	126	207
Illinois	112	73	260	224	367	295	247
Michigan	446	454	640	408	554	39	155
Missouri	245	451	1,963	872	990	1,497	1,434
Delaware	652	866	940	924	1,307	472	671
Maryland	793	1,132	1,634	1,916	2,155	1,092	1,394
Virginia	270	679	1,691	1,193	1,919	1,249	1,291
North Carolina	363	503	1,101	1,668	2,046	1,634	1,252
Florida [2]	182	150	322	1,035	580	678	307
Kentucky	265	395	772	827	467	312	581
Tennessee	1,150	1,839	3,634	3,279	2,902	1,637	1,253
Alabama	139	285	460	693	408	421	440
Arkansas	650	1,087	2,165	1,342	1,613	993	1,295
Louisiana	626	1,525	1,576	1,678	1,865	1,076	2,342
California	258	292	201	226	191	130	104
Other States	428	528	803	1,028	855	405	439
Total	7,199	10,865	18,761	17,801	18,966	12,256	13,650

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Preliminary.

[2] Figures for Florida include shipments in December of preceding year as follows: 1921, 8 cars; 1924, 3 cars; 1925, 10 cars.

TABLE 160.—*Strawberries: Average l. c. l. price per quart to jobbers at nine markets, 1921–1926*

Market. Season beginning March	Mar.[1]	Apr.	May	June [2]
	Cents	*Cents*	*Cents*	*Cents*
New York:				
1921	47	41	27	20
1922	60	37	21	16
1923	65	43	20	18
1924	------	41	20	13
1925	42	37	21	23
1926	------	51	26	21
Chicago:				
1921	31	37	24	14
1922	45	29	14	12
1923	45	41	20	15
1924	------	46	22	17
1925	50	43	21	25
1926	------	42	27	17
Philadelphia:				
1921	33	34	23	13
1922	53	32	18	17
1923	55	40	18	15
1924	------	41	19	10
1925	39	34	17	16
1926	------	44	23	16
Pittsburgh:				
1921	34	34	26	20
1922	50	34	17	18
1923	62	41	22	16
1924	------	49	24	16
1925	46	45	23	28
1926	------	44	28	20
St. Louis:				
1921	31	33	23	14
1922	54	26	14	16
1923	49	40	18	------
1924	------	44	20	11
1925	45	37	18	------
1926	------	41	25	------
Cincinnati:				
1921	33	27	23	------
1922	53	18	12	------
1923	48	30	15	10
1924	------	40	17	15
1925	38	27	17	------
1926	------	38	24	15
Minneapolis:				
1921	37	41	31	24
1922	------	29	18	14
1923	58	45	26	19
1924	------	45	27	19
1925	51	48	24	30
1926	------	42	31	18
Kansas City:				
1921	33	36	23	20
1922	------	31	16	13
1923	46	40	21	16
1924	------	40	22	15
1925	46	42	21	------
1926	------	39	29	18
Washington:				
1924	------	31	17	12
1925	------	27	15	------
1926	------	44	23	------

Division of Statistical and Historical Research. Compiled from Daily Market Report of Division of Fruits and Vegetables.

Average prices as shown are based on stock of good merchantable quality and condition; they are simple averages of daily range of selling prices. In some cases conversions have been made from larger to smaller units or vice versa, in order to obtain comparability.

[1] Quotations began Mar. 17, 1921; Mar. 23, 1922; Mar. 28, 1923; Mar. 31, 1924; Mar. 19, 1925; Mar. 29, 1926.

[2] Last reported quotations of season June 3, 1921; June 6, 1922; June 13, 1923; June 17, 1924; June 9, 1925; June 19, 1926.

TABLE 161.—*Asparagus for consumption fresh, commercial crop: Acreage, production, and price per crate, by States, 1924–1926*

State	Acreage			Production			Price per crate [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 crates* [2]	*1,000 crates* [2]	*1,000 crates* [2]	*Dollars*	*Dollars*	*Dollars*
Early:									
California	3,490	6,600	7,980	632	1,115	1,452	2.46	2.05	3.26
Georgia	2,660	2,820	4,380	32	54	70	3.79	3.70	3.42
South Carolina	3,500	4,500	5,300	105	166	307	4.27	3.46	3.08
Late:									
Delaware	720	1,670	2,160	50	80	143	3.88	3.24	3.00
Illinois	2,640	2,700	3,050	211	224	201	2.30	1.90	1.66
Iowa	140	140	150	10	9	9	1.92	1.70	1.65
Maryland	1,200	1,600	1,920	84	115	121	3.52	3.19	2.00
Michigan	280	320	390	15	24	26	2.74	2.55	2.90
New Jersey	8,000	9,000	10,000	528	648	740	[illegible]	3.25	3.05
Pennsylvania	800	1,000	1,000	58	55	68	4.62	3.53	2.74
Washington	520	720	860	30	58	75	1.82	2.64	2.36
Total or average	23,950	31,070	37,190	1,755	2,548	3,212	2.89	2.61	3.00

Division of Crop and Livestock Estimates.

[1] Average for season.
[2] Crates of 24 pounds.

TABLE 162.—*Asparagus for canning, commercial crop: Acreage, production, and price per ton, by States, 1924–1926*

State	Acreage			Production			Price per ton		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Dollars*	*Dollars*	*Dollars*
California	26,200	34,800	48,300	44,500	45,200	53,100	98.70	78.36	66.29
New York	130	130	150	200	100	100	208.00	249.00	224.50
Total or average	26,330	34,930	48,450	44,700	45,300	53,200	99.19	78.74	66.58

Division of Crop and Livestock Estimates.

TABLE 163.—*Asparagus: Car-lot shipments, by State of origin, March, 1920–July, 1926*

State	Crop movement season [1]						
	1920	1921	1922	1923	1924	1925	1926 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New Jersey	465	237	154	64	156	150	221
Illinois	164	170	161	63	157	165	147
South Carolina	89	129	143	154	185	263	364
Washington	1	2	5	10	10	31	111
California	502	362	304	458	[3] 718	[4] 1,279	[5] 1,513
Other States	5	2		6	9	18	75
Total	1,226	902	767	785	[3] 1,235	[4] 1,906	[5] 2,431

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from Mar. 1 through July of a given year.
[2] Preliminary.
[3] Includes 6 cars in Februray.
[4] Includes 10 cars in February.
[5] Includes 13 cars in October and 5 cars in November.

Table 164.—*Beans, snap, for table consumption, commercial crop: Acreage, production, and price per hamper, by States, 1924–1926*

State	Acreage			Production			Price per hamper [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 hampers* [2]	*1,000 hampers* [2]	*1,000 hampers* [2]	*Dollars*	*Dollars*	*Dollars*
Early:									
Alabama	1,060	680	710	52	45	53	2.27	1.37	2.34
Florida	19,780	20,530	16,000	1,484	1,603	1,184	2.66	2.52	3.37
Georgia	1,850	1,300	1,740	104	68	108	1.47	1.65	2.08
Louisiana	4,800	7,120	8,740	422	527	402	2.79	1.42	2.38
Mississippi	2,800	3,160	3,460	157	212	239	1.74	1.80	2.42
North Carolina	2,630	3,290	3,290	316	329	293	1.10	1.36	1.84
South Carolina	4,490	3,560	4,500	364	295	360	1.75	2.10	2.41
Texas	3,030	4,730	6,070	361	364	552	1.68	1.28	1.62
Virginia	3,720	3,400	2,220	480	388	266	1.80	2.06	2.16
Late:									
Arkansas	-------	1,000	1,280	-------	98	46	-------	1.82	1.44
Illinois	600	550	330	48	37	24	1.58	1.64	1.08
Maryland	2,550	3,920	4,250	178	392	382	1.34	.80	1.06
New Jersey	10,000	11,000	11,000	1,300	1,265	1,320	1.73	1.08	1.00
Tennessee	2,260	1,400	1,670	264	147	134	.92	1.55	1.41
Total or average	59,570	66,240	65,260	5,530	5,830	5,363	1.98	1.71	2.01

Division of Crop and Livestock Estimates.

[1] Average for season. [2] 1-bushel hampers.

Table 165.—*Beans, snap, for canning, commercial crop: Acreage, production, and price per ton, by States, 1924–1926*

State	Acreage			Production			Price per ton		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Dolls.*	*Dolls.*	*Dolls.*
Arkansas	660	1,020	510	1,300	2,400	800	50.00	50.00	50.00
California	620	700	700	1,700	1,400	3,200	62.50	80.00	81.00
Colorado	1,200	1,650	580	3,600	5,000	1,900	60.00	56.67	53.33
Delaware	240	1,150	800	500	1,700	200	44.33	52.50	48.89
Indiana	600	1,130	670	600	2,700	500	61.33	50.00	55.00
Louisiana	590	720	800	500	1,400	400	50.00	52.50	50.00
Maine	950	1,210	860	2,100	2,500	2,000	60.00	60.00	57.00
Maryland	2,500	2,950	2,150	2,800	4,400	1,900	60.62	59.91	51.91
Michigan	1,990	3,000	2,400	2,200	4,500	2,900	57.00	59.00	51.20
Mississippi	1,120	1,360	1,890	1,100	1,400	4,000	50.00	52.50	50.00
New York	5,900	6,370	5,220	13,000	15,900	6,800	85.41	85.46	76.86
Oregon	1,040	1,200	1,250	3,100	4,800	3,100	62.50	60.18	64.00
Pennsylvania	480	1,100	1,010	1,200	2,200	1,200	45.00	48.75	41.83
South Carolina	890	1,160	960	1,100	2,900	1,400	49.38	44.00	42.00
Tennessee	670	1,150	970	1,600	2,100	2,100	50.00	56.00	40.81
Utah	360	450	610	1,000	1,100	1,500	50.00	54.62	49.68
Washington	400	460	270	1,100	1,800	1,000	54.00	46.67	60.00
Wisconsin	3,400	3,610	3,210	3,700	7,200	3,900	71.00	78.19	73.83
Other States	1,420	1,700	1,350	2,100	2,600	1,100	54.44	52.17	57.50
Total or average	25,030	32,090	26,210	44,300	68,000	39,900	66.03	64.32	60.68

Division of Crop and Livestock Estimates.

TABLE 166.—*Beans, snap: Car-lot shipments, by State of origin, 1920–1926*

State	1920	1921	1922	1923	1924	1925	1926 [1]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	43	28	11	33	81	62	39
New Jersey	90	111	68	15	100	48	61
Maryland	159	22	149	49	136	127	198
Virginia	155	79	268	101	899	570	838
North Carolina	183	128	219	261	559	459	550
South Carolina	142	331	503	585	517	334	425
Florida	547	407	750	1,848	1,093	2,083	1,088
Tennessee	20	23	63	81	248	84	174
Mississippi	105	79	252	47	85	88	144
Louisiana	35	202	99	107	439	683	575
Texas	7	39	26	88	210	407	426
Other States	37	151	232	113	251	279	325
Total	1,473	1,600	2,631	3,328	4,618	5,224	4,843

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Preliminary.

TABLE 167.—*Cabbage, commercial crop: Acreage, production, and price per ton, by States, 1924–1926*

State	Acreage			Production [1]			Price per ton		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
Early:	*Acres*	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Dollars*	*Dollars*	*Dollars*
California	5,940	6,080	6,480	36,800	42,600	42,100	38.21	18.33	28.53
Florida	4,920	4,650	3,660	41,800	29,800	22,000	40.28	28.13	48.44
Louisiana	2,460	4,540	9,570	12,300	25,000	47,800	50.51	21.75	30.57
Texas	10,720	14,360	14,000	107,200	76,100	81,200	21.92	10.71	29.23
Second early:									
Alabama	1,520	2,830	3,900	9,900	14,400	19,500	42.81	23.43	20.17
Georgia	220	440	320	1,300	2,500	1,100	25.93	23.51	38.88
Mississippi	3,380	2,760	1,880	14,500	10,700	13,500	38.31	31.51	26.95
North Carolina	640	650	620	3,200	5,100	3,100	58.29	25.46	30.00
South Carolina	3,250	3,550	3,550	19,500	33,700	28,400	57.07	21.74	30.79
Virginia (Eastern Shore and Norfolk)	4,000	3,700	4,100	32,000	27,400	23,000	39.04	36.22	39.43
Intermediate:									
Illinois	820	820	900	6,600	4,900	5,900	17.72	47.72	20.57
Iowa	1,140	960	1,000	8,600	4,800	5,700	11.88	33.20	11.12
Kentucky	360	240	240	2,300	1,700	1,700	25.00	45.00	20.00
Maryland	1,980	1,870	1,650	15,800	11,200	8,700	23.74	23.33	52.65
Missouri	750	750	860	4,500	6,000	6,900	16.43	50.00	13.50
New Jersey	5,100	5,000	6,000	37,700	26,000	41,400	21.60	40.00	24.00
New Mexico	400	400	500	2,400	2,800	4,000	35.00	42.50	32.23
New York (Long Island)	2,470	3,000	3,000	17,300	25,200	24,000	22.63	26.00	15.33
Ohio (Washington County)	700	670	600	4,900	5,400	3,600	16.27	75.93	37.30
Tennessee	800	980	1,560	6,400	5,900	7,800	31.12	44.00	27.20
Virginia (southwest)	2,750	3,000	3,660	21,700	15,600	18,300	15.95	40.95	11.86
Washington	1,370	1,420	1,240	11,000	15,600	12,400	44.94	43.83	28.25
Late:									
Colorado	4,010	2,000	2,400	44,100	23,000	32,200	11.38	18.96	8.91
Indiana	1,730	1,320	1,390	13,800	9,200	12,200	6.25	7.54	9.10
Michigan	3,960	3,160	2,840	38,000	31,000	22,200	13.31	10.10	9.37
Minnesota	3,470	3,390	3,250	33,600	26,800	31,500	7.52	16.52	7.78
New York (except Long Island)	28,900	27,460	28,480	329,500	288,800	304,700	5.65	10.49	9.96
Ohio (except Washington County)	4,060	3,000	2,700	39,800	27,000	24,800	7.84	7.33	7.01
Oregon	920	920	970	5,500	3,700	10,100	23.98	29.09	17.31
Pennsylvania	920	900	1,300	8,300	9,000	12,000	10.00	21.78	20.84
Wisconsin	14,430	13,860	13,140	127,000	135,800	126,100	7.59	8.93	11.39
Total or average	118,090	118,710	125,760	1,056,700	946,200	997,400	16.52	17.43	17.91

Division of Crop and Livestock Estimates.

[1] Includes sauerkraut.

[2] Average for season.

TABLE 168.—*Cabbage for sauerkraut, commercial crop: Acreage, production, and price per ton, by States, 1924–1926*

State	Acreage			Production			Price per ton		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Dollars*	*Dollars*	*Dollars*
Colorado	90	100	100	1,000	1,300	1,600	8.00	8.00	6.38
Illinois	730	420	360	5,800	3,400	2,900	7.00	7.75	7.56
Indiana	460	220	290	3,700	1,500	2,300	7.00	7.00	7.00
Michigan	1,310	1,190	1,150	13,000	11,900	11,500	6.33	6.58	6.50
Minnesota	460	420	420	5,000	4,200	4,400	5.00	7.00	5.00
New York	3,060	2,170	1,930	44,400	26,700	24,300	6.07	6.45	6.12
Ohio	1,810	1,410	1,850	18,100	12,700	20,400	7.50	8.20	6.00
Washington	290	330	380	2,300	4,000	3,800	9.00	10.00	10.00
Wisconsin	2,540	1,970	1,790	23,900	19,700	16,100	8.89	6.75	6.47
Other States	460	460	1,760	4,000	4,400	14,100	9.33	13.24	9.97
Total or average	11,210	8,600	10,030	121,200	89,800	101,400	7.08	7.35	6.89

Division of Crop and Livestock Estimates.

TABLE 169.—*Cabbage: Carlot shipments, by State of origin, January, 1920–April, 1926*

State	Crop movement season [1]					
	1920	1921	1922	1923	1924	
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	
New York	9,511	9,310	[3] 10,274	9,086	11,81[illegible]	
Pennsylvania	239	301	406	317	40[illegible]	
Ohio	524	318	589	538	65[illegible]	
Illinois	156	107	144	289	27[illegible]	
Michigan	598	477	908	732	644	
Wisconsin	4,766	2,908	5,375	6,415	4,95[illegible]	
Minnesota	895	592	1,192	989	1,55[illegible]	
Iowa	373	150	566	390	54[illegible]	
Maryland	219	325	448	220	50[illegible]	
Virginia	1,542	3,541	2,946	3,343	3,39[illegible]	
North Carolina	49	251	213	364	26[illegible]	
South Carolina [4]	904	3,247	3,235	4,299	1,53[illegible]	3,421
Florida [4]	4,579	1,619	2,998	1,172	3,84[illegible]	1,936
Kentucky	112	103	73	85	10[illegible]	
Tennessee	186	181	563	270	34[illegible]	
Alabama [4]	379	1,001	1,364	1,564	90[illegible]	1,270
Mississippi	878	509	1,629	1,134	60[illegible]	671
Louisiana [4]	254	313	334	456	10[illegible]	644
Texas [4]	5,180	1,847	4,049	1,356	7,281	4,048
Colorado	1,832	2,523	1,964	3,174	1,47[illegible]	1,432
Washington	114	170	104	155	5[illegible]	103
California	1,424	882	738	683	37[illegible]	644
Other States	363	358	520	474	43[illegible]	830
Total [4]	35,027	31,033	[3] 41,132	37,505	42,06[illegible]	39,027

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season for cabbage becomes important in the South in January and continues for 16 months ending in April with final shipments from northern points.

[2] Preliminary.

[3] New York includes 1 car in May, 1923.

[4] Figures for certain States include in the January shipments, cars moved in preceding calendar year as follows—1920: Florida, 10 cars in December; Louisiana, 4 cars in December; Texas, 2 cars in November, 28 in December. 1921: Florida, 1 car in October, 1 in November, 18 in December; South Carolina, 2 cars in December; Texas, 25 cars in December. 1922: Alabama, 1 car in December; Florida, 15 cars in December; South Carolina, 1 car in November, 32 in December; Texas, 4 cars in November, 110 in December. 1923: Alabama, 3 cars in December; Florida, 19 cars in December; Louisiana, 2 cars in November, 13 in December, South Carolina, 11 cars in November, 152 in December; Texas, 22 cars in November, 39 in December. 1924: Florida, 72 cars in December; Louisiana, 1 car in November, 7 in December; South Carolina, 24 cars in November, 167 in December; Texas, 9 cars in November, 64 in December. 1925: Florida, 26 cars in December; South Carolina, 8 cars in November, 51 cars in December; Texas, 12 cars in November, 38 cars in December.

TABLE 170.—*Cabbage, Danish: Monthly range and average l. c. l. price per ton*[1] *to jobbers at eight markets*

Market Season beginning October[2]	October Range	October Average	November Range	November Average	December Range	December Average	January Range	January Average	February Range	February Average	March Range	March Average
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Chicago:												
1918							18.00- 42.00	28.00	20.00- 46.00	29.58	35.00- 50.00	41.72
1919	22.00-30.00	25.82	25.00-65.00	35.64	60.00-80.00	68.00	75.00-115.00	96.56	50.00-110.00	70.17		
1920	8.00-13.00	11.15	8.00-15.00	11.09	12.00-17.00	14.15	12.00- 25.00	18.25	8.00- 17.00	14.07	11.00- 16.00	14.10
1921	[3] 40.00-45.00	[3] 41.85	[3] 40.00-65.00	[3] 47.03	[3] 45.00-60.00	[3] 52.43	38.00- 55.90	44.20	30.00- 43.00	36.60		
1922[3]			15.00-22.00	16.60	20.00-26.00	24.20	22.00- 40.00	30.20	38.00- 75.00	48.00	34.00- 70.00	60.20
1923			10.00-24.00	17.00	20.00-30.00	22.60	28.00- 40.00	33.20	27.00- 40.00	32.00		
1924					[4] 25.00-40.00	[4] 30.20	[3] 30.00- 33.00	[3] 30.85	[3] 25.00- 30.00	[3] 28.00	[3] 20.00- 30.00	[3] 25.68
1925	[4] 20.00-25.00	[4] 22.40	[4] 35.00-55.00	[4] 40.00	35.00-50.00	42.25	50.00- 60.00	54.87	50.00- 65.00	53.50		
1926	12.00-18.00	13.68	17.00-35.00	24.50	23.00-27.00	25.00						
New York:												
1918							15.00- 40.00	27.73	18.00- 45.00	27.07	35.00- 65.00	42.36
1919			30.00-50.00	37.94	50.00-80.00	71.67	80.00-125.00	108.67	75.00-115.00	87.40	90.00-110.00	98.33
1920			14.00-25.00	18.64	13.00-18.00	15.21	14.00- 25.00	18.67	12.00- 18.00	14.50	12.00- 20.00	16.06
1921	35.00-42.00	39.23	35.00-50.00	41.52	42.00-55.00	49.50	45.00- 58.00	52.00	35.00- 45.00	40.40	35.00- 50.00	42.20
1922	18.00-25.00	20.20	10.00-25.00	15.80	20.00-28.00	23.60	20.00- 33.00	26.60	32.00- 60.00	41.60	45.00- 70.00	63.20
1923	22.00-32.00	26.60	15.00-28.00	20.20	20.00-35.00	27.20	22.00- 40.00	33.20	28.00- 75.00	39.40	35.00- 75.00	48.80
1924	15.00-20.00	17.60	14.00-25.00	18.40	15.00-24.00	18.60	22.00- 35.00	28.80	8.00- 38.00	22.60	10.00- 25.00	15.40
1925	18.00-28.00	23.16	22.00-40.00	29.24	33.00-55.00	37.54	50.00- 65.00	56.09	50.00- 70.00	60.66	50.00- 60.00	56.35
1926	20.00-25.00	21.76	20.00-25.00	22.54	23.00-38.00	31.17						
Cincinnati:												
1925	18.00-35.00	25.59	25.00-40.00	32.92	30.00-55.00	39.69	50.00- 75.00	62.90	40.00- 70.00	58.91	60.00- 70.00	64.17
1926	25.00-35.00	28.75	20.00-30.00	25.14	20.00-35.00	28.60						
Kansas City:[5]												
1925	1.00- 1.50	1.21	1.75- 2.00	1.79	1.75- 3.00	2.51	3.00- 4.00	3.25	3.00- 4.00	3.40	3.25- 4.00	3.68
1926	.75- 1.25	1.08	1.40- 1.75	1.57	1.35- 1.85	1.67						
Philadelphia:												
1925	12.00-35.00	19.67	18.00-35.00	26.77	28.00-50.00	35.50	45.00- 90.00	58.83	40.00- 75.00	54.20		
1926	15.00-25.00	19.19	15.00-22.00	18.77	20.00-35.00	25.91						
Pittsburgh:												
1925	15.00-25.00	21.50	22.00-35.00	26.76	25.00-50.00	35.41	50.00- 80.00	61.48	50.00- 70.00	58.26	50.00- 80.00	62.89
1926	[6] 14.00-26.00	[6] 19.46	[6] 17.00-22.00	[6] 19.70	[6] 18.00-30.00	[6] 24.18						
St. Louis:												
1925	15.00-30.00	21.64	25.00-50.00	34.80	30.00-60.00	43.11	50.00- 70.00	60.00	50.00- 85.00	65.74		
1926	15.00-45.00	20.96	20.00-35.00	28.62	20.00-40.00	32.29						
Washington:												
1925	25.00-35.00	31.24	30.00-40.00	35.00	40.00-60.00	42.72	60.00- 75.00	65.62				
1926	25.00-30.00	28.46	25.00-30.00	26.88	23.00-40.00	33.10						

Division of Statistical and Historical Research. Compiled from Daily Market Report of Division of Fruits and Vegetables. Average prices as shown are based on stock of good merchantable quality and condition; they are simple averages of daily range of selling prices. In some cases conversions have been made from larger to smaller units or vice versa, in order to obtain comparability.

Earlier data for cities showing prices for 1925–26 are available in 1925 Yearbook, p. 896, Table 230.

[1] Unless otherwise stated, quotations are on bulk per ton sales.
[2] The season during which Danish cabbage prices are obtainable usually runs from October to March of the following year.
[3] Sacked per ton delivered.
[4] Converted from hundredweight price.
[5] Bulk per hundredweight.
[6] Car-lot sales.

TABLE 171.—*Cantaloupes, commercial crop: Acreage, production, and price per crate, by States, 1924–1926*

State	Acreage			Production			Price per crate [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 crates* [2]	*1,000 crates* [2]	*1,000 crates* [2]	*Dollars*	*Dollars*	*Dollars*
Early:									
California (Imperial)	31,000	27,560	35,300	5,800	4,961	4,660	1.53	2.07	1.29
Florida	660	370	380	67	28	30	2.12	1.72	1.30
Georgia	2,980	750	700	289	82	70	1.12	2.35	1.38
Texas (lower valley)	1,050	750	600	105	26	60	4.46	2.15	1.00
Intermediate:									
Arizona	4,000	5,800	7,000	800	1,276	1,400	1.02	1.38	1.32
Arkansas	4,500	7,960	7,960	378	462	398	1.43	1.32	1.36
California (except Imperial)	8,890	10,620	8,380	1,245	1,487	1,575	1.31	1.16	1.60
Delaware	3,300	2,500	2,500	317	362	250	1.61	1.08	.91
Illinois	370	400	400	30	52	26	1.60	1.22	1.08
Indiana	4,320	4,820	4,340	652	627	490	1.37	1.29	1.41
Maryland	5,930	5,570	6,120	593	902	998	1.62	.92	1.42
Nevada	200	270	230	22	36	45	1.48	1.50	1.18
North Carolina	2,570	2,010	2,100	193	241	176	.86	1.14	.88
Oklahoma	450	560	630	45	66	41	1.11	1.10	.80
South Carolina	560	400	620	58	37	65	.51	1.47	.72
Texas, other	3,790	2,250	2,030	265	158	162	1.21	1.69	1.91
Late:									
Colorado	8,040	7,900	11,670	1,166	1,430	1,984	1.19	.91	1.17
Iowa	900	1,060	1,120	54	88	134	1.06	1.20	1.50
Kansas	1,000	450	450	125	58	63	1.38	.90	1.17
Michigan	1,650	1,500	1,280	107	250	134	1.44	1.58	1.30
Nevada	730	660	350	80	87	60	1.35	1.20	1.12
New Jersey	4,550	4,320	4,500	787	821	518	1.39	.93	.65
New Mexico	2,100	2,600	2,600	420	390	442	1.36	1.24	1.06
Tennessee	360	470	600	65	56	39	1.05	1.10	1.15
Washington	1,600	1,510	1,300	315	275	218	1.30	.62	1.28
Total or average	95,500	[illegible]	[illegible]3,160	14,068	14,258	14,038	1.42	1.47	1.29

Division of Crop and Livestock Estimates.

[1] Average for season. [2] Standard crate.

TABLE 172.—*Cantaloupes:*[1] *Carlot shipments, by State of origin, April, 1920–November, 1926*

State	Crop movement season [2]						
	1920	1921	1922	1923	1924	1925	1926 [3]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Indiana	632	644	894	681	822	1,089	615
Michigan	209	232	465	306	114	146	83
Delaware	600	942	843	818	511	657	551
Maryland	781	1,153	1,233	1,270	609	1,116	1,285
North Carolina	358	894	700	620	401	655	394
South Carolina	131	281	270	70	116	33	163
Georgia	387	619	1,632	217	586	117	108
Arkansas	986	1,554	1,002	337	1,052	1,245	1,083
Texas	169	156	186	387	456	498	513
Colorado	2,482	3,288	4,420	2,308	3,229	3,837	5,155
New Mexico	968	508	275	364	518	574	640
Arizona	1,159	1,504	1,558	1,208	2,145	3,833	3,743
Washington	380	208	371	207	298	221	145
California	[4] 13,251	13,166	15,304	16,486	19,932	[5] 18,707	18,268
Other States	460	666	777	646	617	1,091	594
Total	[4] 22,953	25,815	29,930	25,923	31,496	[5] 33,819	33,340

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include these by boat reduced to car-lot basis.

[1] Includes honeydews and other miscellaneous melons not separately reported until 1923. The shipments of melons, other than cantaloupes, amounted in 1923 to 1,152 cars; in 1924, to 2,565; in 1925 to 3,054, and in 1926 to 5,986.

[2] Crop-movement season extends from April 1 through November of a given year.

[3] Preliminary.

[4] Includes 1 car in December.

[5] Includes 18 cars in December.

TABLE 173.—*Carrots, commercial crop: Acreage, production, and price per bushel, by States, 1924–1926*

State	Acreage			Production			Price per bushel [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Dollars*	*Dollars*	*Dollars*
Early:									
Louisiana	1,270	2,360	6,160	293	573	1,060	1.03	0.70	0.70
Mississippi	3,040	2,400	1,500	910	442	300	1.14	.76	1.23
Texas	2,250	5,750	3,920	848	1,501	1,047	.45	.34	.32
Late.									
Illinois	800	800	800	320	380	352	1.12	.55	.75
New Jersey	1,300	1,200	1,400	408	252	350	1.04	1.04	1.00
New York	2,220	2,100	2,250	1,305	1,010	1,246	.71	.61	.51
Total or average	11,480	14,610	16,030	4,084	4,158	4,355	.84	.56	.62

Division of Crop and Livestock Estimates.

[1] Average for season.

TABLE 174.—*Cauliflower, commercial crop: Acreage, production, and price per crate, by States, years beginning October, 1924–1926*

State	Acreage			Production			Price per crate [1]		
	1923–4	1924–5	1925–6	1923–4	1924–5	1925–6	1923–4	1924–5	1925–6
	Acres	*Acres*	*Acres*	*1,000 crates*	*1,000 crates*	*1,000 crates*	*Dollars*	*Dollars*	*Dollars*
California [2]	6,550	6,610	10,500	1,703	2,148	3,224	1.21	1.11	0.48
Colorado	400	1,000	1,100	64	160	99	1.11	.71	1.05
New Jersey	300	400	300	42	52	44	1.40	1.38	1.15
New York	4,350	5,530	5,660	652	713	1,358	1.85	1.55	1.36
Oregon [2]	1,400	1,600	5,000	280	320	825	1.45	1.05	.69
Total or average	13,000	15,140	22,560	2,741	3,393	5,550	1.39	1.18	.74

Division of Crop and Livestock Estimates.

[1] Average for season.
[2] Season of California and Oregon begins in October of the previous year.

TABLE 175.—*Cauliflower: Car-lot shipments, by State of origin, July, 1920–June, 1926*

State	Crop movement season [1]					
	1920	1921	1922	1923	1924	1925 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	781	567	683	653	734	834
Michigan	2	4	1	34	67	
Colorado		3	4	101	61	[3] 191
Oregon	76	134	282	374	109	1,246
California	2,957	3,629	3,604	3,054	3,404	4,356
Other States	37	26	34	87	79	[4] 100
Total	3,853	4,363	4,608	4,303	4,454	[5] 6,727

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from July 1 through June of the following year.
[2] Preliminary.
[3] Includes 1 car in June, 1925.
[4] Includes 2 cars in July, 1926.
[5] Includes 1 car in June, 1925, and 2 cars in July, 1926.

TABLE 176.—*Celery, commercial crop: Acreage, production, and price per crate, by States, 1924–1926*

State	Acreage			Production			Price per crate [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 crates* [2]	*1,000 crates* [2]	*1,000 crates* [2]	*Dollars*	*Dollars*	*Dollars*
Early:									
Florida	4,000	4,320	3,520	1,900	2,000	1,320	2.58	2.24	3.00
Late:									
California	6,330	6,250	8,550	1,386	1,369	2,078	1.34	1.49	1.82
Colorado	720	920	940	248	386	282	2.51	3.16	1.22
Michigan	4,110	3,860	3,720	645	780	521	1.97	1.68	1.92
New Jersey	1,370	1,420	1,350	522	416	417	1.19	1.52	1.09
New York	4,790	4,660	4,890	1,676	1,351	1,506	1.40	1.27	1.50
Ohio	710	680	540	124	160	120	1.56	1.68	1.68
Oregon	300	340	360	112	111	144	1.72	1.69	1.83
Pennsylvania	380	380	400	128	112	135	2.67	1.11	1.46
Total or average	22,710	22,830	24,270	6,741	6,685	6,523	1.83	1.79	1.91

Division of Crop and Livestock Estimates.

[1] Average for season.
[2] New York crate, two-thirds size.

TABLE 177.—*Celery: Car-lot shipments, by State of origin, June, 1920–May, 1926*

State	Crop movement season [1]					
	1920	1921	1922	1923	1924	1925 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	3,110	3,047	3,248	3,741	4,529	4,492
New Jersey	94	219	115	219	177	149
Pennsylvania	186	224	212	223	225	208
Ohio	46	67	76	55	64	71
Michigan	954	1,031	1,626	1,486	1,332	2,224
Florida	4,218	4,954	6,398	7,219	7,952	5,392
Colorado	305	211	222	125	197	309
Oregon	16	53	82	205	363	398
California	3,472	2,617	4,337	4,693	4,175	[3] 5,953
Other States	23	[4] 19	52	76	84	66
Total	12,424	[4] 12,442	16,368	18,042	19,098	[3] 19,352

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from June 1 of one year through May of the following year, except in Florida, where the season extends through June.
[2] Preliminary.
[3] Includes 50 cars in April and 190 cars in May, 1925.
[4] Includes 1 car from Texas in May, 1921.

TABLE 178.—*Corn, sweet, for canning, commercial crop: Acreage, production, and price per ton, by States, 1924–1926*

State	Acreage			Production			Price per ton		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Dollars*	*Dollars*	*Dollars*
Delaware	4,400	5,000	3,000	8,400	13,500	8,400	12.00	18.00	15.00
Illinois	60,560	70,650	58,280	103,000	169,600	145,700	13.58	14.29	14.23
Indiana	21,000	86,990	30,380	35,700	88,800	88,100	14.74	14.83	10.18
Iowa	55,500	70,720	50,480	83,200	190,900	151,400	9.55	11.14	10.35
Maine	13,390	15,630	13,940	36,200	45,300	43,200	29.10	29.76	28.72
Maryland	32,500	42,820	28,850	58,500	115,600	63,500	14.69	17.67	14.08
Michigan	11,000	13,630	11,080	13,200	34,100	22,200	14.76	14.30	12.54
Minnesota	21,000	30,540	24,450	52,500	64,100	73,400	9.46	10.28	9.93
Nebraska	7,000	8,880	6,970	12,600	19,500	18,800	9.18	10.94	10.07
New Hampshire	1,200	1,470	1,010	3,400	3,800	2,200	24.40	25.00	23.65
New York	26,000	31,350	27,420	46,800	72,100	60,300	19.59	20.74	18.24
Ohio	27,450	34,520	26,380	38,400	110,500	71,200	10.64	13.61	10.14
Pennsylvania	3,200	6,850	4,840	6,400	24,700	9,700	17.72	18.93	13.00
Vermont	2,500	2,620	2,370	7,000	6,800	5,700	20.00	19.94	21.30
Wisconsin	13,720	17,740	17,350	17,800	44,400	29,500	11.93	12.33	11.81
Other States	2,370	4,500	4,840	4,700	10,400	9,700	13.50	14.00	12.00
Total or average	302,790	393,910	311,640	527,800	1,014,100	803,000	14.17	15.04	13.17

Division of Crop and Livestock Estimates.

TABLE 179.—*Corn, canned: Production*[1] *in the United States, 1917–1926*

[Thousand cases[1]—i. e., 000 omitted]

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
Maine	567	1,113	1,652	1,588	911	1,066	923	1,294	1,693	1,347
New York	257	489	1,014	829	564	616	434	749	1,311	1,038
Ohio	1,200	1,584	1,360	1,544	850	1,073	1,390	787	2,375	1,735
Indiana	742	513	586	861	709	665	1,208	846	2,223	2,044
Illinois	2,422	2,199	2,225	2,271	1,711	1,939	2,833	2,310	4,030	3,053
Wisconsin	166	373	635	590	576	625	648	388	1,148	843
Minnesota	202	309	456	643	573	598	898	1,199	1,541	1,762
Iowa	2,280	2,300	2,496	3,246	1,190	1,959	2,382	1,764	4,105	5,361
Maryland	2,002	2,033	2,081	2,217	1,130	1,944	2,256	1,707	3,678	2,133
Other States	965	809	1,045	1,251	629	934	1,134	1,087	2,216	1,753
United States	10,803	11,722	13,550	15,040	8,843	11,419	14,106	12,131	24,320	19,069

Division of Statistical and Historical Research. Compiled from National Canners' Association data.

[1] Stated in cases of 24 No. 2 cans.

TABLE 180.—*Cucumbers for consumption, fresh, commercial crop: Acreage, production, and price per hamper, by States, 1924–1926*

State	Acreage			Production			Price per hamper [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 hampers* [2]	*1,000 hampers* [2]	*1,000 hampers* [2]	*Dollars*	*Dollars*	*Dollars*
Early:									
Alabama	2,540	2,240	2,880	432	417	472	0.77	1.48	0.56
Florida	12,370	10,830	7,590	1,002	1,256	1,108	3.30	2.36	2.51
Georgia	2,260	610	720	120	70	67	1.20	1.15	.85
Louisiana	540	1,800	2,810	108	139	292	1.77	1.96	1.59
South Carolina	3,560	2,900	4,120	605	458	490	.57	1.58	1.02
Texas (southern district)	950	980	2,800	163	66	333	1.70	2.14	1.55
Virginia	1,730	1,560	1,640	260	257	205	.80	.75	1.15
Second Early:									
North Carolina	3,560	5,310	4,570	890	860	530	.94	.93	1.13
Intermediate:									
Arkansas	500	1,410	1,760	50	151	150	1.11	1.04	1.01
Delaware	740	1,480	1,630	118	167	184	1.71	.57	.70
Illinois (southern)	520	740	560	104	130	67	1.58	.80	.78
Maryland	1,420	2,080	2,080	220	416	260	1.54	.53	.56
New Jersey	2,000	2,500	2,100	342	500	420	1.55	.67	.95
Late:									
New York	3,400	4,490	3,950	544	516	490	1.54	.60	.94
Total or average	36,090	38,930	39,210	4,958	5,403	5,068	1.57	1.30	1.33

Division of Crop and Livestock Estimates.

[1] Average for season.

[2] Bushel hamper

TABLE 181.—*Cucumbers for pickles, commercial crop: Acreage, production, and price per bushel, by States, 1924–1926*

State	Acreage			Production			Price per bushel		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Dollars*	*Dollars*	*Dollars*
California	2, 150	3, 210	3, 560	245	491	513	1.00	1.09	0.93
Colorado	2, 800	3, 500	2, 900	98	357	177	1.00	1.00	.87
Illinois	1, 310	1, 630	390	37	114	20	1.39	1.39	1.22
Indiana	7, 240	8, 430	7, 250	188	430	392	1.30	1.11	1.12
Iowa	2, 250	2, 850	630	45	177	26	1.07	1.09	1.11
Michigan	35, 440	36, 810	25, 080	851	2, 025	1, 051	1.13	1.11	.98
Minnesota	3, 940	4, 340	2, 300	67	195	104	1.25	1.03	.90
Missouri	330	1, 050	780	13	61	27	1.42	.91	.82
New York	1, 530	1, 320	920	50	152	32	1.25	1.00	.88
Ohio	1, 500	2, 250	1, 600	50	162	88	1.48	1.26	.90
Washington	430	670	530	13	97	32	1.00	1.00	.90
Wisconsin	17, 990	20, 900	11, 950	504	1, 216	598	1.00	1.03	.92
Other States	8, 440	13, 110	10, 360	388	1, 337	673	1.29	.78	.92
Total or average	85, 410	100, 130	68, 200	2, 549	6, 814	3, 733	1.14	1.02	.96

Division of Crop and Livestock Estimates.

TABLE 182.—*Cucumbers: Car-lot shipments by State of origin, 1920–1926*

State	1920	1921	1922	1923	1924	1925	1926 [1]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	312	540	395	383	694	686	444
New Jersey	267	271	164	258	276	481	259
Ohio	52	118	124	68	111	91	187
Illinois	142	164	68	15	77	245	151
Delaware	256	137	191	225	240	302	304
Maryland	297	343	368	446	311	598	487
Virginia	83	19	221	84	387	448	202
North Carolina	408	641	687	1, 175	1, 639	1, 562	809
South Carolina	525	664	887	720	918	794	668
Georgia	1	3	211	45	154	72	62
Florida	835	1, 414	2, 034	1, 647	1, 381	1, 963	1, 982
Alabama	259	109	702	367	576	706	684
Texas	95	64	119	46	147	72	316
California	-----	89	68	125	23	125	86
Other States	137	256	110	96	248	347	479
Total	3, 689	4, 832	6, 349	5, 700	7, 182	8, 492	7, 180

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Preliminary.

TABLE 183.—*Eggplant, commercial crop: Acreage, production, and price per bushel, by States, 1924–1926*

State	Acreage			Production			Price per bushel [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Dollars*	*Dollars*	*Dollars*
Florida	1, 020	1, 400	1, 020	502	384	408	1.30	1.30	1.34
Louisiana	-----	800	1, 020	-----	152	133	-----	1.05	1.05
New Jersey	1, 600	1, 100	1, 000	283	330	220	1.14	.73	1.00
Texas	70	190	180	10	38	25	.61	1.00	1.00
Total or average	2, 690	3, 490	3, 220	795	904	786	1.24	1.04	1.10

Division of Crop and Livestock Estimates.

[1] Average for season.

TABLE 184.—*Lettuce, commercial crop: Acreage, production, and price per crate, by States, 1924–1926*

State	Acreage			Production			Price per crate [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 crates* [2]	*1,000 crates* [2]	*1,000 crates* [2]	*Dollars*	*Dollars*	*Dollars*
Early:									
Arizona	5,800	6,400	8,300	1,305	1,440	1,868	1.18	1.06	1.96
California [3]—									
Imperial	20,000	23,000	28,000	3,700	4,600	4,900	1.71	1.71	1.81
Other	18,060	24,680	37,000	3,919	4,368	5,550	1.16	1.16	1.37
Florida	3,490	3,400	1,500	914	765	252	1.29	1.41	2.21
North Carolina	1,540	1,730	1,420	200	467	379	2.82	1.98	2.00
South Carolina	1,120	1,480	780	151	247	133	1.92	1.69	1.81
Texas	760	680	640	133	68	72	.86	1.38	1.19
Virginia	300	300	300	36	39	38	1.77	2.07	1.70
Late:									
Colorado	5,600	10,500	13,240	476	1,396	1,523	2.16	1.58	1.43
Idaho	1,420	1,500	1,200	192	180	125	1.50	1.86	1.47
New Jersey	2,000	2,200	2,400	546	541	504	1.42	1.64	1.08
New Mexico	250	1,400	1,030	56	280	77	1.55	1.76	1.66
New York	6,290	6,820	7,200	1,113	1,323	1,246	2.07	1.42	1.59
Oregon	300	300	300	48	45	18	1.50	1.92	1.42
Pennsylvania	70	70	80	5	11	12	2.17	2.50	1.24
Washington	1,400	1,450	2,440	315	290	512	1.14	2.50	1.27
Wyoming	200	110	210	52	16	27	1.85	1.50	1.40
Total or average	68,660	86,020	106,100	13,221	16,076	17,236	1.50	1.48	1.60

Division of Crop and Livestock Estimates.

[1] Average for season.
[2] Crates of 4 dozen heads each.
[3] Crop year beginning October of previous year.

TABLE 185.—*Lettuce: Carlot shipments by State of origin, 1920–1926*

State	1920	1921	1922	1923	1924	1925	1926 [1]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	1,775	3,240	3,167	3,817	3,698	3,821	3,015
New Jersey	208	469	571	456	417	463	296
North Carolina	207	445	622	718	714	537	540
South Carolina	121	716	987	577	423	736	372
Florida	2,940	2,267	3,323	3,146	2,257	1,519	902
Idaho	25	180	889	1,241	532	501	381
Colorado	129	234	812	1,436	1,036	3,096	2,773
Arizona	254	168	678	1,108	2,049	3,519	4,846
Washington	354	635	812	1,081	674	820	898
California	7,358	9,850	9,744	15,113	18,480	21,018	27,401
Other States	417	534	635	792	655	676	536
Total	13,788	18,738	22,240	29,485	30,935	37,306	41,960

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Preliminary.

TABLE 186.—*Onions, commercial crop: Acreage, production, and price per bushel, by States, 1924–1926*

State	Acreage			Production			Price per bushel [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Dollars*	*Dollars*	*Dollars*
Early (Bermuda and Creole):									
California	1,540	1,550	2,750	522	488	894	0.92	1.74	1.39
Louisiana	1,670	2,320	2,300	209	278	294	.89	1.36	1.17
Texas	10,230	9,580	12,510	2,066	2,203	2,552	1.32	1.40	1.36
Total or average	13,440	13,450	17,560	2,797	2,969	3,740	1.21	1.45	1.35
Intermediate (domestic):									
Iowa	750	740	780	273	313	246	1.24	2.36	.94
Kentucky	1,100	750	1,000	330	210	250	1.25	1.58	.50
New Jersey	2,400	2,400	2,900	653	432	580	1.53	1.70	1.00
Texas (Collin County)	1,200	1,300	1,500	192	214	262	.91	.92	.84
Virginia	1,000	800	1,000	200	100	100	1.13	2.00	.76
Washington	1,760	1,270	1,800	484	286	540	.98	.75	.45
Late (domestic):									
California	4,650	5,850	6,250	1,279	1,755	1,781	.78	1.16	.64
Colorado	3,410	3,520	3,700	921	1,144	1,018	.58	.78	.50
Idaho	520	1,400	900	208	637	261	.85	.71	.48
Illinois	830	840	670	198	218	168	.95	.85	.98
Indiana	8,350	8,100	9,300	2,088	2,308	2,539	.64	.98	.56
Iowa (late crop)	1,100	1,400	1,600	418	556	480	.81	99	.46
Massachusetts	3,190	3,920	4,420	1,244	1,533	1,746	.89	1.08	.62
Michigan	2,970	2,680	3,370	1,093	713	1,284	.60	.86	.63
Minnesota	1,700	1,560	1,870	468	452	527	.71	.91	.54
New York	7,750	8,910	7,580	3,255	3,430	2,729	.79	.97	.67
Ohio	6,240	3,460	5,300	2,184	1,031	1,367	.67	1.06	.65
Oregon	950	1,050	900	323	398	285	.82	.71	.51
Pennsylvania	250	190	180	81	53	50	.88	1.61	.95
Utah	300	500	800	138	330	330	75	.70	.60
Wisconsin	1,180	960	1,180	319	341	342	.68	.90	.51
Total or average	51,650	51,600	57,000	16,349	16,454	16,885	.79	1.02	.62
Grand total or average	65,090	65,050	74,560	19,146	19,423	20,625	.86	1.08	.76

Division of Crop and Livestock Estimates.

[1] Average for season.

TABLE 187.—*Onions: Carlot shipments by State of origin, March, 1920–June, 1926*

State	Crop movement season [1]					
	1920	1921	1922	1923	1924	1925 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Massachusetts	3,914	2,244	1,912	2,454	2,481	2,856
New York	3,384	2,890	2,812	5,505	5,335	5,109
New Jersey	371	429	479	335	403	235
Ohio	3,239	1,749	4,493	2,714	4,492	1,856
Indiana	4,124	1,972	4,684	4,610	3,735	4,158
Illinois	409	251	487	378	241	291
Michigan	939	417	1,867	1,222	1,623	1,402
Wisconsin	409	90	330	273	212	361
Minnesota	287	169	500	189	487	674
Iowa	830	416	927	882	1,176	1,365
Virginia	139	280	371	274	345	138
Kentucky	304	382	258	263	266	152
Texas	4,957	4,209	4,630	3,027	3,918	3,941
Idaho	28	50	161	256	322	876
Colorado	150	447	651	928	1,064	1,809
Utah	9	54	170	177	216	599
Washington	810	702	765	1,126	1,016	1,000
Oregon	27	343	263	392	558	681
California	4,802	3,542	4,349	3,427	2,671	3,603
Other States	341	254	369	330	235	540
Total	29,473	20,890	30,478	28,762	30,796	31,646

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from Mar. 1 of one year through June of the following year.
[2] Preliminary.

TABLE 188.—*Onions: Average l. c. l. price per 100 pounds to jobbers, at five markets, 1920–1925*

Market. Season beginning August	Various common varieties								Bermudas					
									Apr.		May [2]		June [2]	
	Aug.[1]	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Yellow	Crystal White wax	Yellow	Crystal White wax	Yellow	Crystal White wax
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
New York:														
1920	2.53	2.24	1.56	1.55	1.23	1.31	0.98	0.80	4.34	3.46	3.15	3.79	2.93	3.01
1921	2.80	3.43	5.06	5.63	5.45	7.34	8.25	8.21	7.66	6.20	4.14	3.79	3.91	3.54
1922	2.08	1.52	1.72	2.00	2.99	2.83	2.45	2.98			5.31	5.19		
1923	2.68	3.21	3.26	2.75	2.76	2.73	2.33	2.20			3.27			
1924	2.17	1.89	1.84	2.08	2.84	3.05	3.05	2.86	4.19	5.04	6.16	5.01	7.18	
1925	2.94	2.36	2.86	2.80	3.26	2.95	2.69	2.81			4.37		3.27	
1926	2.26	1.59	1.82	1.92	2.74									
Chicago:														
1920	2.06	1.94	1.59	1.56	1.31	1.16	.98	.93	3.48	4.37	2.7[illegible]	3.73	2.53	3.27
1921	2.58	3.61	4.47	5.11	5.62	7.09	7.64	8.53	6.21	6.47	4.[illegible]5	4.20	3.43	3.89
1922	2.12	1.61	1.70	2.22	2.29	2.56	3.44	3.38	5.96		5.15	5.79		
1923	3.19	3.48	3.29	3.22	3.07	3.27	3.04	2.79	5.17		3.37	4.10		
1924	3.11	2.73	2.43	2.52	2.88	3.96	4.38	4.32	4.15	5.46	6.33	6.75	7.94	8.39
1925	3.41	2.90	3.11	3.35	3.46	3.20	2.81	3.18	5.60	5.92	3.97	4.71	3.21	3.61
1926	2.25	2.07	1.92	1.69	2.46									
Philadelphia:														
1920		2.03	1.49	1.51	1.23	1.27	.98	.87	4.04	3.88	3.26	3.70	2.75	2.61
1921	3.02	3.80	4.80	5.34	5.52	6.93	8.09	8.98	7.03	6.00	4.13	4.04	4.07	
1922	2.19	1.63	1.57	1.82	2.73	2.90	2.54	3.20	6.03					
1923	3.07	3.45	3.09	2.73	2.61	2.58	2.21	2.11	4.76		3.42			
1924	2.91	1.99	1.70	1.76	2.59	3.01	3.00	2.82	4.19		6.45		7.46	
1925	3.07	2.48	2.38	2.44	2.63	2.80	2.64	2.74			4.53		3.64	
1926	1.82	1.68	1.83	1.69	2.10									
St. Louis:														
1920	2.40	1.67	1.55	1.55		1.17	.91	.70	3.30	4.40	2.63	3.47		3.20
1921	2.95	3.70	4.88	5.45	5.68	6.97	7.90	8.52	5.95	5.67	3.17	4.19	3.37	
1922			1.89	2.20	2.39	2.92	2.52	3.14			5.05	5.20		
1923	2.55	3.45	3.45	3.23	3.05	3.45	3.39	2.90	4.11		2.94	3.73		
1924		2.23	1.70	1.86	2.79	3.82	3.78	3.58	3.86	4.65	5.97	6.29	7.40	8.29
1925		2.64	2.67	2.98	2.86	2.65	2.39	2.16			3.64	4.82	3.05	3.57
1926	2.13	1.95	2.08	1.87	2.67									
Boston:														
1925	3.11	2.50	2.33	2.91	2.93	2.92	2.63	2.99	5.69		4.69		3.95	
1926	1.89	1.73	1.75	1.81	2.53									

Division of Statistical and Historical Research. Compiled from Daily Market Report of Division of Fruits and Vegetables.

Average prices as shown are based on stock of U. S. No. 1 grade; they are simple averages of daily range of selling prices. In some cases conversions have been made from larger to smaller units, or vice versa, in order to obtain comparability.

[1] Quotations began Aug. 23, 1920; Aug 22, 1921; Aug 7, 1922; Aug. 14, 1923, Aug 22, 1924; July 22, 1925.
[2] Last reported quotations of season June 11, 1921; June 14, 1922, May 29, 1923; June 4, 1924; June 10, 1925.

TABLE 189.—*Peas, green, for consumption fresh; commercial crop: Acreage; production, and price per hamper, by States, 1924–1926*

State	Acreage			Production			Price per hamper [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 Hampers* [2]	*1,000 Hampers* [2]	*1,000 Hampers* [2]	*Dollars*	*Dollars*	*Dollars*
Early:									
Arizona	450	1,150	400	14	52	11	2.72	1.41	1.56
California—(Imperial)	950	1,400	2,500	52	66	250	2.14	2.56	2.36
Other [3]	5,100	5,100	7,700	266	224	385	3.15	2.76	4.56
Florida	1,330	2,250	760	78	86	40	3.70	2.84	2.67
Louisiana		530	900		26	44		1.32	1.94
Mississippi	2,380	2,000	2,050	162	104	195	1.60	2.16	1.81
North Carolina	4,770	3,840	3,880	343	415	213	1.09	1.42	1.32
South Carolina	1,720	1,160	1,700	71	93	95	1.94	2.05	1.26
Virginia	2,000	2,300	2,440	170	184	117	1.76	2.07	.93
Late:									
Colorado	850	2,560	1,940	68	256	120	1.85	3.07	2.91
Maryland		450	450		29	27		1.75	1.16
New Jersey	3,200	3,500	3,800	182	192	308	2.34	1.56	2.20
New York	4,920	6,980	7,800	492	510	624	1.58	1.65	1.33
Tennessee		460	500		21	25		1.60	1.87
Total or average	27,680	33,680	36,820	1,898	2,258	2,454	1.94	2.01	2.18

Division of Crop and Livestock Estimates.

[1] Average for season.
[2] 1-bushel hampers.
[3] Includes the fall crop moved in September, October, and November.

Table 190.—*Peas, green, for canning; commercial crop: Acreage, production, and price per ton, by States, 1924–1926*

State	Acreage			Production			Price per ton		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Dollars*	*Dollars*	*Dollars*
California	5,260	4,890	2,680	3,700	3,400	3,200	70.00	63.75	65.00
Colorado	3,140	3,520	2,570	2,500	3,200	2,300	52.54	60.00	60.00
Delaware	2,500	2,500	2,220	2,500	2,000	1,100	67.50	70.88	60.00
Illinois	10,790	8,050	9,000	8,600	5,600	8,100	77.48	70.34	65.00
Indiana	6,190	4,320	6,000	6,200	3,500	5,400	46.32	53.57	52.05
Maine	1,030	1,770	1,410	900	1,600	600	70.00	70.00	70.00
Maryland	9,530	11,600	8,800	9,500	10,400	8,800	68.70	66.84	60.00
Michigan	12,220	13,010	14,430	9,800	6,500	11,500	50.65	50.69	50.00
Minnesota	5,200	7,880	8,570	5,200	4,700	3,400	47.60	47.52	53.79
New Jersey	590	280	350	600	200	400	64.00	67.00	61.00
New York	38,030	33,310	34,990	38,000	26,600	31,500	64.64	63.63	60.66
Ohio	5,830	4,850	4,210	5,800	2,400	2,900	60.00	62.00	63.62
Pennsylvania	1,280	1,690	900	1,300	800	800	60.00	60.00	58.89
Utah	10,360	10,750	9,510	12,400	17,200	12,400	57.75	56.05	58.27
Wisconsin	109,870	111,710	106,120	131,800	111,700	116,700	57.99	57.18	57.32
Other States	4,770	6,500	6,640	5,200	6,500	5,300	46.54	51.15	55.67
Total or average	226,590	226,630	218,400	244,000	206,300	214,400	59.40	58.54	57.93

Division of Crop and Livestock Estimates.

Table 191.—*Peas, canned: Production in the United States, 1917–1926*

[Thousand cases [1]—i. e., 000 omitted]

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
New York	1,394	2,000	1,040	2,381	1,382	2,137	2,541	2,931	2,385	2,624
New Jersey [2]	755	332	248	549	345	153	199	331	257	143
Ohio	322	442	306	282	241	225	384	430	232	278
Indiana	604	454	381	271	182	268	367	483	86	500
Illinois	576	978	433	460	331	516	586	697	357	680
Michigan	523	477	425	549	317	455	392	710	451	723
Wisconsin	3,569	4,520	4,317	5,804	4,063	7,042	6,961	10,390	10,003	9,287
Minnesota [3]	-	-	-	-	-	-	254	470	432	446
Maryland	721	683	509	696	533	489	591	873	956	840
Utah	421	527	395	595	876	751	918	830	1,346	1,029
California	350	253	205	328	84	496	239	282	271	222
Other States	594	397	426	402	853	510	516	888	1,040	937
United States	9,829	11,063	8,685	12,317	8,207	13,042	13,948	19,315	17,816	17,709

Division of Statistical and Historical Research. Compiled from National Canners' Association data.

[1] Stated in cases of 24 No. 2 cans.
[2] Includes Delaware.
[3] Previous to 1923, included in "Other States."

TABLE 192.—*Peppers, commercial crop: Acreage, production, and price per bushel by States, 1924–1926*

State	Acreage 1924	Acreage 1925	Acreage 1926	Production 1924	Production 1925	Production 1926	Price per bushel[1] 1924	Price per bushel[1] 1925	Price per bushel[1] 1926
	Acres	*Acres*	*Acres*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Dollars*	*Dollars*	*Dollars*
California		200	250		59	74		2.50	0.85
Florida	3,530	3,560	3,480	1,479	1,168	1,392	1.37	1.64	2.20
Louisiana	410	1,870	2,850	72	299	288	1.30	1.18	1.38
Mississippi			200			17			1.70
New Jersey	6,500	7,000	7,500	1,976	1,715	1,950	.88	1.00	.63
North Carolina	330	650	650	69	120	124	1.57	1.62	1.25
Texas	390	420	500	78	84	88	1.24	2.06	1.10
Total or average	11,160	13,700	15,430	3,674	3,455	3,933	1.11	1.31	1.28

Division of Crop and Livestock Estimates.

[1] Average for season.

POTATOES

TABLE 193.—*Potatoes: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Farm value Dec. 1	Value per acre[1]	Chicago cash price per hundred weight, fair to fancy[2] December Low	December High	Following May Low	Following May High	Domestic exports fiscal year beginning July 1[3]	Imports, fiscal year beginning July 1[3]
	1,000 acres	*Bushels*	*1,000 bushels*	*Cents*	*1,000 dollars*	*Dollars*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Bushels*	*Bushels*
Average: 1909–1913	3,677	97.3	357,699	60.5	216,495	58.87	70	114	78	156	1,688,595	3,658,022
1914–1920	3,841	98.1	376,675	108.2	407,388	106.06	142	281	208	426	3,615,854	2,662,596
1921–1925	3,697	106.9	395,242	93.8	370,198	100.31	132	258	258	540	2,771,717	1,828,682
1909	*3,669*	107.5	394,553	54.2	213,679	58.24	33	97	27	57	999,476	353,208
1910	3,720	93.8	349,032	55.7	194,566	52.30	50	80	58	125	2,383,887	218,984
1911	3,619	80.9	292,737	79.9	233,778	64.60	117	167	150	333	1,237,276	13,734,695
1912	3,711	113.4	420,647	50.5	212,550	57.28	67	108	55	117	2,028,261	337,230
1913	3,668	90.4	331,525	68.7	227,903	62.13	83	117	100	150	1,794,073	3,645,993
1914	3,711	110.5	409,921	48.7	199,460	53.75	50	110	57	250	3,135,474	270,942
1915	3,734	96.3	359,721	61.7	221,992	59.45	88	158	133	183	4,017,760	209,532
1916	3,565	80.5	286,953	146.1	419,333	117.62	208	317	333	625	2,489,001	3,079,025
1917	4,384	100.8	442,108	122.8	542,774	123.81	155	225	80	250	3,453,307	1,180,480
1918	4,295	95.9	411,860	119.3	491,527	114.44	90	225	125	250	3,688,840	3,534,076
1919	3,542	91.2	322,867	159.5	514,855	145.36	280	360	685	925	3,723,484	6,940,930
1920	3,657	110.3	403,296	114.5	461,778	126.27	120	225	40	500	4,803,159	3,423,189
1921	3,941	91.8	361,659	110.1	398,362	101.08	100	245	190	235	2,327,147	2,109,537
1922	4,307	105.3	453,396	58.1	263,355	61.15	75	175	90	700	2,979,951	572,147
1923	3,816	109.0	416,105	78.1	324,889	85.13	80	200	105	525	3,074,946	564,046
1924	3,327	126.7	421,585	62.5	263,312	79.14	80	220	312	515	3,652,972	477,554
1925	3,092	104.6	323,465	186.8	601,072	195.36	325	450	591	725	1,823,571	5,420,125
1926[4]	3,151	113.1	356,360	141.7	504,993	160.26	200	300				

Division of Crop and Livestock Estimates; figures in italics are census returns.

[1] Based on farm price December 1.
[2] Burbank to 1910.
[3] Compiled from Commerce and Navigation of United States 1909–1918 and June issues of Monthly Summaries of Foreign Commerce, 1919–1926.
[4] Preliminary.

TABLE 194.—*Potatoes: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Maine	124	143	135	127	31,992	45,045	33,750	36,830
New Hampshire	13	11	11	11	2,470	1,870	1,595	1,815
Vermont	24	20	19	20	4,800	3,200	2,375	3,100
Massachusetts	26	14	14	18	4,680	2,100	1,960	2,015
Rhode Island	2	2	2	3	330	280	280	450
Connecticut	22	15	15	14	3,520	1,950	2,025	2,170
New York	323	300	270	248	39,729	42,000	23,220	29,016
New Jersey	82	65	55	50	7,790	9,750	5,830	7,250
Pennsylvania	249	210	202	198	26,145	24,780	24,846	22,176
Ohio	126	108	113	107	12,348	9,504	11,978	10,058
Indiana	75	52	50	48	7,875	5,148	4,150	3,840
Illinois	104	80	72	68	9,568	8,800	4,320	5,440
Michigan	314	260	237	249	35,796	33,800	24,411	29,880
Wisconsin	272	242	211	230	26,112	31,460	23,632	27,140
Minnesota	399	340	276	298	40,698	44,880	26,772	29,800
Iowa	81	79	83	77	6,804	10,744	5,229	6,083
Missouri	93	85	76	81	9,300	8,330	4,332	6,480
North Dakota	158	125	104	94	13,114	11,250	7,488	7,520
South Dakota	83	70	61	55	7,744	5,740	3,965	3,300
Nebraska	111	89	84	73	8,880	7,743	6,300	5,329
Kansas	55	54	54	43	4,730	5,130	3,618	3,913
Delaware	10	7	6	6	800	630	384	516
Maryland	49	39	37	41	3,920	3,237	2,701	3,690
Virginia	152	140	130	134	14,136	18,340	11,700	11,658
West Virginia	49	45	47	47	5,880	4,275	4,089	4,982
North Carolina	50	59	58	74	4,300	6,195	4,524	7,400
South Carolina	32	30	25	29	3,296	3,320	2,400	3,219
Georgia	22	20	17	19	1,540	1,440	833	1,197
Florida	19	29	23	24	1,748	2,552	2,852	2,832
Kentucky	58	48	46	47	4,930	4,800	2,760	4,512
Tennessee	32	35	37	35	2,880	2,800	2,072	2,730
Alabama	44	28	25	29	3,520	2,520	1,425	2,030
Mississippi	15	12	11	12	1,110	972	737	852
Arkansas	33	26	28	32	1,947	1,924	1,680	1,920
Louisiana	26	28	30	36	1,638	1,904	1,800	2,196
Oklahoma	42	32	39	43	2,772	2,240	2,808	2,838
Texas	35	25	26	30	1,925	1,675	1,378	2,100
Montana	36	34	35	35	3,960	2,992	3,780	2,975
Idaho	67	65	73	91	12,060	11,050	14,308	16,198
Wyoming	18	13	12	13	1,800	1,235	1,440	1,456
Colorado	110	88	80	84	13,530	12,320	14,640	11,760
New Mexico	3	2	2	2	150	104	150	166
Arizona	4	3	3	4	240	162	171	220
Utah	16	14	15	17	2,688	1,918	2,400	2,465
Nevada	5	4	4	5	870	524	680	700
Washington	52	51	56	67	8,060	7,650	8,680	10,720
Oregon	44	40	40	45	4,180	3,840	4,160	4,500
California	52	46	43	43	7,800	7,452	6,837	6,923
United States	3,816	3,327	3,092	3,151	416,105	421,585	323,465	356,300

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 195.—*Potatoes: Yield per acre, by States, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Bu.	*Bu.*	*Bu.*	*Bu*	*Bu.*	*Bu.*	*Bu*		*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*
Me	262	298	187	258	315	250	290	N. C	90	88	94	86	105	78	100
N. H	153	160	100	190	170	145	165	S. C	94	85	76	103	111	96	111
Vt	151	150	120	200	160	125	155	Ga	67	75	68	70	72	49	63
Mass	135	115	90	180	150	140	155	Fla	101	92	110	92	88	124	118
R. I	130	115	90	165	140	140	150	Ky	78	65	80	85	100	60	96
Conn	134	103	140	160	130	135	155	Tenn	72	52	80	90	80	56	78
N. Y	112	103	110	123	140	86	117	Ala	76	75	80	80	90	57	70
N. J	124	95	173	95	150	106	145	Miss	75	68	85	74	81	67	71
Pa	108	86	108	105	118	123	112	Ark	63	55	68	59	74	60	60
Ohio	88	58	89	98	88	106	95	La	65	67	65	63	68	60	61
Ind	83	51	76	105	99	83	80	Okla	67	58	68	66	70	72	66
Ill	76	53	63	92	110	60	80	Tex	59	56	62	55	67	53	70
Mich	107	80	106	114	130	103	120	Mont	109	115	126	110	88	108	85
Wis	106	68	124	96	130	112	118	Idaho	183	185	185	180	170	196	178
Minn	99	75	90	102	132	97	100	Wyo	107	108	110	100	95	120	112
Iowa	86	43	105	84	136	63	79	Colo	142	132	130	123	140	183	140
Mo	75	58	60	100	98	57	80	N. Mex	57	60	50	50	52	75	83
N. Dak	86	96	90	83	90	72	80	Ariz	74	115	85	60	54	57	55
S. Dak	75	61	78	88	82	65	60	Utah	165	161	197	168	137	160	145
Nebr	81	80	84	80	87	75	73	Nev	159	148	174	174	131	170	140
Kans	75	64	64	86	95	67	91	Wash	148	135	145	155	150	155	160
Del	76	50	96	80	90	64	86	Oreg	98	90	105	95	96	104	100
Md	80	65	101	80	83	73	90	Calif	148	140	130	150	162	159	160
Va	106	108	107	93	131	90	87	U. S	107.5	91.8	105.3	109.0	126.7	104.6	113.1
W. Va	97	85	99	120	95	87	106								

Division of Crop and Livestock Estimates.

TABLE 196.—*Potatoes, early and second early, commercial crop: Acreage, production, and price per bushel, by States, 1924–1926*

State	Acreage			Production			Price per bushel [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
Early:	*Acres*	*Acres*	*Acres*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Dollars*	*Dollars*	*Dollars*
Alabama	12,500	8,940	12,750	1,412	715	982	.90	1.20	1.78
California	11,000	11,850	13,780	1,012	1,635	1,929	1.34	1.19	1.23
Florida	28,000	21,920	23,070	2,184	2,718	2,722	2.14	1.74	3.04
Georgia	2,630	2,010	2,250	274	131	191	1.52	1.61	2.17
Louisiana	15,510	16,630	20,000	1,241	1,047	1,200	1.22	1.24	2.06
Mississippi	1,300	1,240	1,300	104	68	104	.92	1.54	1.77
North Carolina	26,000	22,100	29,000	3,640	2,144	3,480	.95	1.28	1.68
South Carolina	21,130	14,860	18,720	2,916	1,828	2,527	1.17	1.48	1.72
Texas	10,000	10,710	12,060	680	932	1,049	1.45	1.44	2.37
Virginia	100,520	90,050	96,400	15,983	9,185	9,447	.74	1.40	1.32
Second early:									
Arkansas	2,500	3,400	4,180	188	289	280	1.02	1.39	1.50
Kansas (Kaw Valley)	17,100	16,500	15,800	2,873	1,700	2,481	.63	1.26	.83
Kentucky	5,680	5,620	5,620	541	601	584	.70	1.63	1.25
Maryland	15,980	13,150	14,800	1,518	1,131	1,421	.58	1.43	.97
Missouri (Orrick district)	4,500	4,800	5,000	495	480	1,000	.65	1.41	.77
Nebraska (Kearney district)	2,000	1,500	800	150	172	72	.70	1.42	.75
New Jersey	26,000	40,000	25,650	3,900	4,240	3,591	.81	1.35	1.87
Oklahoma	9,900	14,500	14,400	792	1,450	1,411	1.09	1.20	1.52
Total or average	312,250	298,780	315,580	40,203	30,466	34,471	.92	1.39	1.54

Division of Crop and Livestock Estimates.

[1] Average for season.

TABLE 197.—*Potatoes: Acreage, yield per acre and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*

Country	Acreage: Average 1909–1913 [1]	Acreage: Average 1921–1925	Acreage: 1924	Acreage: 1925	Acreage: 1926, preliminary	Yield per acre: Average 1909–1913 [1]	Yield per acre: Average 1921–1925	Yield per acre: 1924	Yield per acre: 1925	Yield per acre: 1926, preliminary	Production: Average 1909–1913 [1]	Production: Average 1921–1925	Production: 1924	Production: 1925	Production: 1926, preliminary
NORTHERN HEMISPHERE															
NORTH AMERICA	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Canada	483	611	562	546	546	161.2	157.1	168.0	129.4	148.6	77,843	96,009	94,413	70,633	81,137
United States	3,677	3,697	2,327	3,092	3,151	97.3	106.9	126.7	104.6	113.1	357,699	395,242	421,585	323,465	356,360
Mexico											[2] 540	[3] 935		943	
Total, United States and Canada	4,160	4,308	3,889	3,638	3,697	104.7	114.0	132.7	108.3	118.3	435,542	491,251	515,998	394,098	437,497
EUROPE															
United Kingdom:															
England and Wales	434	506	452	493	499	230.2	230.8	222.7	243.4	206.7	99,893	116,764	100,651	119,989	133,152
Scotland	144	146	138	142	142	240.8	250.1	228.6	261.6	236.4	34,674	36,520	31,547	37,147	33,563
North Ireland	588	[4] 158	157	154	153	203.9	[4] 224.5	197.1	283.3	333.3	119,874	36,262	30,943	43,625	[5] 51,000
Irish Free State		[4] 388	393	380	375		[4] 162.8	141.7	210.1	174.1		63,188	55,704	79,833	[5] 65,300
Norway	102	121	117	117	119	242.9	229.7	183.9	294.9	265.8	24,780	27,796	21,517	34,500	31,633
Sweden	377	387	390	392	396	152.7	169.5	133.6	205.6	174.4	57,581	65,611	52,109	80,615	69,065
Denmark	161	196	177	186	191	202.7	224.6	152.8	259.0	148.1	32,642	44,020	27,039	48,167	28,292
Netherlands:															
For direct consumption	411	355	333	334	419	253.2	265.3	253.1	275.1	236.8	104,051	94,199	84,271	91,873	99,206
For starch manufacture		75	81	87			410.3	407.6	476.3			31,222	33,018	41,434	
Belgium	404	406	392	395	396	274.3	265.5	268.6	288.4	267.2	110,830	107,785	105,306	113,936	105,820
Luxemburg	36	37	38	39	38	178.9	163.2	167.7	186.2	119.9	6,439	6,040	6,372	7,262	4,556
France	4,066	3,607	3,615	3,619	3,574	129.6	125.1	156.0	154.3	107.5	526,793	451,353	564,020	558,316	384,302
Spain	[3] 642	[6] 781	779			[3] 176.0	[6] 125.6	114.6			[3] 112,997	[6] 98,064	89,267	[5] 102,700	[5] 112,000
Portugal		[4] 50					[4] 128.7					[4] 6,437	7,088	9,712	[4] 7,470
Italy	759	840	860	855	870	88.9	78.4	83.7	92.7	97.6	67,514	65,851	71,943	79,281	84,913
Switzerland	[4] 115	111	110	111	118	214.5	220.6	180.4	245.0	189.9	[6] 24,664	24,483	19,840	27,190	22,413
Germany	6,775	6,953	6,821	6,941	6,816	202.7	187.6	196.1	220.8	161.9	1,373,609	1,304,447	1,337,540	1,532,872	1,103,439
Austria	436	390	414	435	433	122.4	138.9	146.2	174.7	118.3	53,373	54,182	60,524	76,000	51,235
Czechoslovakia	1,849	1,580	1,567	1,580	1,605	133.7	151.5	152.7	174.4	145.7	245,210	247,176	239,358	275,522	283,830

Hungary	619	640	612	644	622	114.9	89.0	92.2	131.8	108.2	71,118	56,935	56,406	84,858	67,330
Yugoslavia	458	537	539	570		101.1	68.0	70.0	78.9		46,288	36,528	37,753	44,965	[5] 37,300
Malta	4	4	3	4	5	167.5	176.8	227.3	191.5	208.2	670	707	682	766	1,041
Greece	[2] 12	[4] 30				85.2	56.9				[2] 1,023	[4] 1,708		[5] 1,870	[5] 1,870
Bulgaria	11	23	22	27	24	48.4	60.3	57.5	89.6	75.5	532	1,388	1,266	2,418	1,811
Rumania:															
Grown alone	[6] 343	420	446	460	442	[6] 122.1	129.2	127.4	129.0	154.7	[6] 41,868	54,277	56,815	59,351	68,363
Grown with corn	[6] 55	144	175	161	144						[6] 1,218	3,012	4,503	3,027	5,163
Poland	5,693	5,502	5,760	5,829	5,902	156.2	177.7	171.4	183.5	154.9	869,531	977,581	987,279	1,069,450	914,137
Lithuania	403	374	436	403	362	101.4	162.2	139.7	144.2	163.7	40,864	60,655	60,926	58,095	59,252
Latvia	209	178	185	196	203	120.7	138.4	134.2	140.7	183.4	25,217	24,644	24,827	27,574	37,238
Estonia	190	173	166	170	172	144.9	149.0	149.5	140.4	186.4	27,526	25,773	24,817	23,872	32,066
Finland	[2] 181	167	166	167	167	101.9	130.6	140.4	159.1	165.6	18,443	21,809	23,300	26,570	27,656
Russia, European	6,780	8,104	9,923	10,648		104.0	128.3	108.5	97.7		705,432	1,039,890	1,076,258	1,039,890	
Total European countries reporting area and production, all years shown	24,310	23,737	23,851	24,160	24,043	164.4	168.5	171.0	190.4	153.1	3,997,696	4,000,668	4,078,020	4,600,516	3,680,613
Estimated European total, excluding Russia	25,470	25,080	24,420	25,750	25,440						4,164,600	4,147,500	4,218,400	4,762,900	3,883,000
AFRICA															
Algeria	44	46	47	46	74	42.0	48.7	36.0	59.1	15.8	1,847	2,242	1,690	2,719	1,170
Tunis	(3)	3	3	3	2	(50.0)	49.7	47.0	49.0	77.0	(150)	149	141	147	154
Total	47	49	50	49	76	42.5	48.8	36.6	58.5	17.4	1,997	2,391	1,831	2,863	1,324
ASIA															
Russia (Asiatic)	445	[3] 631	510	752		79.3	102.1	111.6	95.7		35,296	[3] 64,447	56,931	71,962	
Japanese Empire:															
Japan	169	[6] 243				146.4	140.7				24,738	[6] 34,191			
Chosen	[3] 65	185	180	185		107.1	86.9	78.3	80.8		[3] 6,960	16,077	14,093	14,951	
Greater Lebanon		[4] 8	10	7	7		155.1	147.0	132.9	118.1		[4] 1,241	1,470	930	827
Total Northern Hemisphere countries reporting area and production, all years shown	28,517	28,094	27,790	27,847	27,816	155.5	160.0	165.4	179.5	148.1	4,435,235	4,494,310	4,595,849	4,997,477	4,119,434
Estimated Northern Hemisphere total, excluding Russia and China	30,100	30,000	29,900	30,000	30,000						4,647,000	4,708,000	4,799,000	5,225,000	4,338,000

[1] Averages for countries having changed boundaries are estimates for territory within present boundaries.
[2] One year only.
[3] Two-year average.
[4] Three-year average.
[5] Unofficial estimate.
[6] Four-year average

TABLE 197.—*Potatoes: Acreage, yield per acre and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*—Continued

Country	Acreage					Yield per acre					Production				
	Average 1909–1913	Average 1921–1925	1924	1925	1926, preliminary	Average 1909–1913	Average 1921–1925	1924	1925	1926, preliminary	Average 1909–1913	Average 1921–1925	1924	1925	1926, preliminary
SOUTHERN HEMISPHERE	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Brazil		[4] 88	111				[4] 94.9	76.9				[4] 8,349	8,532		
Chile	69	75	72	68		123.3	144.1	144.5	161.4		8,510	10,811	10,406	10,972	
Uruguay		[4] 11					[4] 29.1					[4] 330			
Argentina	217	331	291	363		140.6	90.2	87.2	90.1		30,515	29,865	25,367	23,693	
Union of South Africa	[2] 62	[4] 85				[2] 49.5	[4] 44.6				[2] 3,071	[4] 3,793			
Madagascar	[4] 54	[4] 58	56	55		[4] 87.4	[4] 81.0	105.0	100.2		[4] 4,721	[4] 4,698	5,879	5,511	
Australia	144	[6] 140	139			100.5	[6] 99.7	89.2			14,469	[6] 13,964	12,399		
New Zealand	28	21	23	23	24	205.8	212.5	198.3	233.9		5,763	4,463	4,562	5,380	
Total Southern Hemisphere countries reporting area and production, all years shown through 1925	368	485	442	409		134.5	102.8	104.6	111.4		49,509	49,837	46,214	45,556	
Estimated Southern Hemisphere, total	690	850	830	780							75,800	78,400	73,400	74,100	
Total Northern and Southern Hemisphere countries reporting area and production, all years shown through 1925	28,885	28,579	28,232	28,256		155.3	159.0	164.4	178.5		4,484,744	4,544,147	4,642,063	5,043,033	
Estimated world total, excluding Russia and China	30,800	30,900	30,800	30,800							4,722,000	4,786,000	4,872,000	5,299,000	

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture, except as otherwise stated. Estimates given are for crops harvested during the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere.

[2] One year only. [4] Three-year average. [6] Four-year average.

TABLE 198.—*Potatoes: Car-lot shipments by State of origin, April, 1920–December, 1926*

State	Crop movement season [1]								
	1920	1921	1922	1923	1924	1925 [2]	Quarters, 1926 [2]		
							Apr.–June	July–Sept.	Oct.–Dec.
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Maine	18,695	38,035	24,404	34,764	43,145	38,830	----------	4,848	14,176
New York	17,340	18,990	19,292	18,634	20,123	11,505	----------	4,158	4,570
New Jersey	16,878	10,368	18,335	6,352	8,637	3,355	----------	4,537	159
Pennsylvania	6,723	3,554	5,751	4,092	3,943	6,027	----------	219	1,103
Michigan	17,171	15,237	[3] 19,836	20,555	17,450	14,200	----------	1,470	6,242
Wisconsin	19,832	11,051	21,788	17,137	16,031	15,944	----------	1,751	5,766
Minnesota	23,879	29,579	28,931	33,602	31,695	23,233	----------	3,591	9,365
Iowa	947	96	843	273	554	220	----------	79	16
North Dakota	1,924	10,592	8,351	10,384	6,061	4,812	----------	813	2,275
South Dakota	1,993	3,386	2,703	3,860	1,886	1,024	----------	84	337
Nebraska	3,055	5,375	5,564	4,833	2,918	4,342	----------	682	1,492
Kansas	1,994	2,349	2,433	3,565	4,797	2,735	5	4,026	5
Maryland	3,275	2,402	3,497	2,728	2,679	1,512	9	1,911	50
Virginia	15,877	17,698	19,023	15,923	23,608	15,882	4,375	12,030	32
North Carolina	2,644	3,089	4,194	3,478	6,568	4,040	5,162	1,525	5
South Carolina	2,437	2,446	4,345	4,210	5,266	3,674	5,187	24	----------
Florida	3,441	2,391	[4] 5,047	3,499	4,377	[5] 5,138	[6] 4,813	7	2
Kentucky	1,233	643	496	1,241	1,593	735	----------	408	1
Alabama	324	593	1,925	1,384	2,920	1,046	2,215	6	----------
Arkansas	247	138	341	231	449	537	427	75	1
Louisiana	1,067	1,211	1,083	825	1,425	1,280	1,402	17	4
Oklahoma	580	267	1,000	1,034	1,263	2,335	1,766	351	23
Texas	822	[7] 1,135	1,499	801	1,425	[8] 1,424	[9] 1,982	8	11
Montana	968	1,845	1,412	757	420	1,509	----------	62	302
Idaho	8,636	11,795	16,213	15,616	11,942	18,271	----------	2,924	7,029
Wyoming	572	958	1,037	687	652	998	----------	390	200
Colorado	11,229	17,697	15,468	13,869	12,386	15,422	20	4,400	4,551
Utah	617	1,078	2,037	1,017	727	1,162	39	766	252
Nevada	437	469	744	700	452	719	----------	41	442
Washington	3,937	6,193	5,059	6,160	6,695	8,979	----------	1,746	3,998
Oregon	1,759	1,368	1,842	1,615	927	1,494	----------	126	1,275
California	10,953	9,301	7,766	5,724	6,588	6,102	1,706	2,708	1,664
Other States	1,400	1,675	2,086	2,577	2,981	3,067	573	2,178	419
Total	292,886	[7] 236,003	[10] 254,345	242,127	252,583	[11] 221,643	[12] 29,681	57,961	65,767

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from Apr. 1 of one year through July of the following year, except in Florida, where the season begins in March.
[2] Preliminary.
[3] Includes 8 cars in August, 1923.
[4] Includes 1 car in February, 1922.
[5] Includes 28 cars in February, 1925.
[6] Includes 2 cars in February, 1926.
[7] Includes 32 cars in March, 1921.
[8] Includes 11 cars in March, 1925.
[9] Includes 3 cars in March, 1926
[10] Includes 1 car in February, 1922 and 8 in August, 1923.
[11] Includes 28 cars in February and 11 in March, 1925.
[12] Includes 2 cars in February and 3 in March, 1926.

TABLE 199.—*Potatoes: Car-lot shipments by State of origin*

State and year	Crop movement season [1]																
	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Maine:																	
1924					107	2,767	5,955	4,051	3,908	4,999	5,244	5,105	4,861	3,961	1,904	283	43,145
1925 [2]					1,206	4,549	5,835	3,030	3,110	4,227	3,791	5,068	2,830	3,349	1,793	42	38,830
1926 [2]					334	4,514	6,846	3,553	3,777								
New York:																	
1924				30	465	1,419	2,887	2,709	1,732	2,275	2,282	2,539	2,167	1,269	321	28	20,123
1925 [2]				582	1,694	1,670	2,355	700	854	819	820	1,174	646	256	24	1	11,595
1926 [2]				11	1,784	2,363	2,643	1,158	769								
New Jersey:																	
1924				42	4,213	3,625	530	76	26	14	19	70	11	1			8,637
1925 [2]				299	2,733	172	65	62	8		1	11	3	1			3,355
1926 [2]				108	3,453	976	42	117									
Pennsylvania:																	
1924				1	5	372	745	707	351	450	482	328	317	171	12	2	3,943
1925 [2]					101	1,034	1,937	998	541	535	282	347	184	63	5		6,027
1926 [2]					12	207	444	453	206								
Michigan:																	
1924					37	1,648	2,250	1,964	1,132	1,876	1,796	2,110	1,669	2,175	778	13	17,450
1925 [2]				5	949	1,927	2,955	1,258	931	901	1,009	1,164	993	1,423	679	6	14,200
1926 [2]					128	1,342	3,334	1,850	1,058								
Wisconsin:																	
1924					2	768	2,359	1,558	1,145	2,281	1,860	2,160	1,578	1,785	527	8	16,031
1925 [2]				2	676	2,265	3,284	1,560	1,210	1,336	1,338	1,782	951	730	310		15,944
1926 [2]				1	302	1,448	2,504	1,814	1,448								
Minnesota:																	
1924				29	571	2,659	8,785	3,672	1,214	3,096	3,828	4,176	1,946	1,362	355	2	31,696
1925 [2]				505	2,625	3,665	4,728	1,447	782	1,621	2,465	2,673	1,668	830	274		23,233
1926 [2]				6	1,093	2,492	6,641	1,801	863								
North Dakota:																	
1924					3	283	2,005	580	159	588	778	1,057	361	191	56		6,061
1925 [2]				2	15	945	1,826	309	118	267	374	644	263	42	7		4,812
1926 [2]					9	804	1,957	229	89								
Nebraska:																	
1924				6	175	314	414	275	207	633	455	209	95	64	11		2,918
1925 [2]				48	276	608	950	595	219	470	470	389	205	107	10		4,342
1926 [2]				1	195	486	770	456	266								
Kansas:																	
1924			35	2,520	1,845	337	53	3	1	1		1	1				4,797
1925 [2]			75	2,264	391	2	1				1		1				2,735
1926 [2]			5	2,280	1,731	15	3	1	1								

Virginia:																	
1924			3,810	15,229	3,495	549	157	144	110	20	9	55	20	10			23,608
1925 [2]			7,574	8,045	183	21	13	9	1	2	12	22					15,882
1926 [2]			4,375	11,422	531	77	11	19	2								
North Carolina:																	
1924	3	33	4,956	1,276	157	109	13	5	1	1	6	6	2				6,568
1925 [2]		521	3,253	206	57						2	1					4,040
1926 [2]		14	5,148	1,328	155	42	3	2									
South Carolina:																	
1924		1,527	3,666	68	4						1						5,266
1925 [2]		3,049	622	3													3,674
1926 [2]		1,248	3,939	23		1											
Florida: [3]																	
1924	1,444	2,801	126	4					1	1							4,377
1925 [2]	3,296	1,828	9	1	1				1	1	1						5,138
1926 [2]	1,491	3,180	142	7					2								
Idaho:																	
1924				128	667	1,373	1,750	1,400	1,025	1,766	1,141	1,369	1,155	134	34		11,942
1925 [2]				243	803	1,116	2,350	2,358	1,859	2,291	1,592	2,811	1,684	1,096	68		18,271
1926 [2]				159	897	1,868	3,118	1,921	1,990								
Colorado:																	
1924				207	598	2,080	1,968	1,493	913	1,883	1,354	855	566	448	21		12,386
1925 [2]			27	537	698	2,695	3,039	1,122	901	1,527	1,293	1,750	915	831	87		15,422
1926 [2]			20	255	1,096	3,049	2,503	1,067	981								
Washington:																	
1924				201	262	552	1,242	896	482	886	325	472	955	266	156		6,695
1925 [2]				286	411	843	1,442	1,086	351	758	705	1,286	830	527	454		8,979
1926 [2]				332	432	982	1,934	1,309	755								
California:																	
1924		98	549	784	823	956	798	709	635	532	343	210	125	36			6,588
1925 [2]		141	574	848	1,019	976	677	334	354	501	298	186	114	80			6,102
1926 [2]		324	1,382	763	947	998	711	531	422								
Other States:																	
1924	232	3,020	4,511	3,067	2,965	1,566	2,240	610	165	413	441	473	420	165	35		20,353
1925 [2]	[4] 990	2,638	3,454	3,553	1,026	1,086	2,174	1,418	334	430	379	682	718	155	25		[4] 19,062
1926 [2]	[4] 757	2,608	5,046	3,467	2,263	772	1,498	1,281	554								

[1] Crop movement season extends from Apr. 1 of one year through July of the following year, except in Florida where the season begins in March.
[2] Subject to revision.
[3] Includes cars moved earlier as follows: 109 in March, 1924; 28 in February and 373 in March, 1925; 2 in February and 32 in March, 1926.
[4] Texas includes 11 cars in March, 1925, and 3 in March, 1926.

TABLE 199.—*Potatoes: Car-lot shipments by State of origin*—Continued

State and year	Crop movement season [1]																
	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Total:																	
1920	[5] 228	3,985	13,532	15,281	14,119	18,875	32,170	26,067	10,411	14,477	12,487	16,312	12,957	9,584	2,345	56	[5] 202,886
1921	[6] 2,128	5,342	14,076	15,550	16,240	26,322	42,956	16,729	10,440	16,721	13,721	22,113	17,500	11,933	4,161	71	[6] 236,003
1922	[7] 2,781	8,351	17,943	18,762	18,239	24,420	35,193	21,050	12,448	17,262	14,609	24,432	22,052	10,991	5,521	[8] 291	[9] 254,345
1923	[10] 1,183	5,311	14,774	16,450	16,727	24,063	35,224	20,737	11,977	19,762	20,716	22,831	17,891	11,257	3,192	32	[10] 242,127
1924	[11] 1,679	7,479	17,653	23,592	16,394	21,387	34,141	20,852	13,237	21,715	20,366	21,255	16,249	12,038	4,210	336	[11] 252,583
1925 [2]	[12] 4,286	8,177	15,588	17,429	14,864	23,569	33,631	16,286	11,524	16,186	14,833	19,990	12,005	9,490	3,736	40	[12] 221,643
1926 [2]	[13] 2,248	7,374	20,059	20,163	15,362	22,436	34,962	17,622	13,183								

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

Shipments for 1920–1923 are available in 1925 Yearbook, p. 921, Table 271.

[1] Crop movement season extends from April 1 of one year through July of the following year, except in Florida, where the season begins in March.
[2] Subject to revision.
[5] Includes 11 cars from Florida in March, 1920.
[6] Includes 105 cars from Florida and 32 cars from Texas in March, 1921.
[7] Includes 1 car in February aud 221 in March from Florida in 1922.
[8] Includes 8 cars from Michigan in August, 1923.
[9] Includes 222 cars from Florida in February and March, 1922, and 8 cars from Michigan in August, 1923.
[10] Includes 36 cars from Florida in March, 1923.
[11] Includes 109 cars from Florida in March, 1924.
[12] Includes 28 cars in February; 373 cars from Florida and 11 cars from Texas in March, 1925.
[13] Includes 2 cars from Florida in February; 32 from Florida and 3 from Texas in March, 1926.

TABLE 200.—*Potatoes: International trade, average 1911–1913, annual 1923–1925*

[Thousand bushels—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	1,337	543	81	1,155	55	2,557	281	1,252
Belgium	4,921	8,692	3,230	6,513	2,704	2,814	4,817	3,782
Canada	525	1,207	375	2,976	940	3,130	572	6,281
China	36	288		201		320		170
Czechoslovakia			358	2,037	146	122	146	179
Denmark	40	928	213	506	175	334	412	90
Estonia			2	537		791	(1)	851
France	7,143	8,683	10,880	8,064	5,841	10,289	6,797	10,347
Hungary			131	1,060	17	626	[2] 117	[2] 1,238
Italy	242	3,975	39	6,122	69	6,791	212	7,731
Japan		440		321		303		474
Netherlands	1,952	16,451	747	13,399	506	15,344	434	15,552
Poland			17	6,068	33	10,972	35	3,535
Russia	309	7,762			[2] 7	[2] 61	[2] 15	[2] 29
Spain		1,835	1,325	1,624	481	1,429	1,248	1,821
PRINCIPAL IMPORTING COUNTRIES								
Algeria	1,218	931	993	955	1,305	1,067	1,313	1,795
Austria			2,979	94	1,666	[2] 15	2,215	[2] 33
Austria-Hungary	4,070	1,451						
Brazil	989	(1)	59	1	1,534	(1)	496	[2,3] 2
British India			1,193	23	858	9		
Cuba	2,001	2	3,992		4,860	3		
Egypt	599	[4] 28	763	53	765	68	841	77
Finland	479	15	1,167	(1)	614	1	635	(1)
Germany	29,180	12,412	6,394	743	10,652	2,317	14,395	9,774
Irish Free State					842	547	707	741
Norway	215	60	8	15	1	104	150	19
Philippine Islands	334		322		300		322	
Portugal	273	500	1,362	[2] 29	661	[2,5] 20	[2,5] 1,220	[2,5] 144
Sweden	700	64	364	14	268	5	344	3
Switzerland	3,172	42	1,461	7	2,930	4	2,264	6
Tunis	[6] 294	[6] 2	[3] 394	[2] 1	365	3	361	3
United Kingdom	11,382	6,246	9,055	2,412	16,791	1,531	18,331	1,614
United States	5,707	1,814	732	2,696	452	3,862	2,433	2,323
Uruguay	[4] 768	1	[7] 1,304	(1)	1,234	[2] 1	1,535	(1)
Other countries	931	779	3,624	2,786	3,761	2,378	3,843	1,620
Total	78,767	75,151	53,564	60,412	60,833	67,818	66,492	70,986

Division of Statistical and Historical Research. Official sources except where otherwise noted.

[1] Less than 500 bushels.
[2] International Yearbook of Agricultural Statistics.
[3] Seven months.
[4] One year only.
[5] Nine months.
[6] Two-year average.
[7] Eleven months.

TABLE 201.—*Potatoes: Estimated price per bushel, received by producers, United States, 1909–1926*

Year beginning July	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted av.
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Average:													
1909–1913	82.2	84.0	74.4	65.0	61.4	62.3	64.2	66.3	67.5	68.8	69.5	71.8	69.0
1914–1920	152.8	138.7	120.3	111.8	110.6	111.5	117.9	128.9	135.3	145.5	156.7	156.5	128.4
1921–1925	110.0	128.3	108.7	96.5	104.3	103.1	110.2	113.4	113.8	123.7	118.0	111.7	109.9
1909	88.0	78.3	67.9	61.0	56.0	55.0	56.1	55.4	51.0	42.9	37.9	38.8	57.9
1910	52.5	68.9	70.4	61.8	55.7	54.9	54.6	55.2	55.4	59.0	62.9	79.8	61.8
1911	116.2	124.8	101.0	82.3	78.1	82.2	89.4	98.2	109.6	122.2	123.5	111.6	99.6
1912	95.0	75.8	58.0	48.3	48.0	50.6	51.8	52.6	51.2	49.2	51.7	52.5	55.6
1913	59.5	72.2	74.6	71.8	69.2	68.6	69.0	70.2	70.4	70.7	71.4	76.4	70.6
1914	84.3	81.0	69.8	58.8	50.8	49.2	50.0	50.4	49.1	49.2	50.6	51.4	58.0
1915	54.2	53.4	49.6	54.8	61.2	66.2	79.8	91.2	96.0	96.2	96.8	100.6	70.8
1916	98.8	102.4	110.6	123.8	140.9	146.7	159.8	206.6	237.7	257.2	276.8	261.0	166.3
1917	209.4	155.0	130.6	125.0	125.8	121.9	122.0	121.6	106.4	86.4	77.8	85.2	122.5
1918	118.2	145.2	146.2	135.4	123.2	117.7	115.2	111.9	107.4	112.2	120.2	124.9	125.6
1919	160.6	190.2	175.8	158.5	156.2	169.0	198.1	230.6	269.6	344.6	407.4	403.6	223.8
1920	344.4	248.9	159.8	126.6	116.4	110.0	100.6	89.8	80.9	72.9	67.6	68.5	131.5
1921	103.4	152.8	153.1	130.6	116.8	109.4	112.0	116.6	115.7	109.6	104.2	103.7	121.3
1922	109.0	101.4	78.8	66.2	60.5	58.8	62.0	64.2	68.6	77.4	79.0	79.8	73.9
1923	102.9	120.8	109.6	91.4	82.5	81.5	86.4	88.1	87.8	91.1	91.3	100.7	94.2
1924	109.0	111.3	81.0	68.8	63.5	64.1	70.2	72.3	71.4	70.5	70.6	84.4	76.5
1925	125.5	155.4	121.1	125.6	198.4	201.5	220.5	226.0	225.6	270.5	244.8	190.1	183.5
1926	174.6	140.5	130.6	126.4	141.3	137.0	------	------	------	------	------	------	--------

Division of Crop and Livestock Estimates. Mean of prices reported on 1st of month and 1st of succeeding month, July, 1909–December, 1923.

TABLE 202.—*Potatoes: Estimated price per bushel, received by producers, December 1, average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Me.	89	85	45	70	43	200	133	N. C.	131	143	101	120	112	180	160
N. H.	135	135	105	115	84	235	170	S. C.	159	150	128	160	145	210	170
Vt.	119	104	93	100	85	215	140	Ga.	165	165	140	160	150	210	190
Mass.	145	152	95	135	96	245	180	Fla.	196	190	175	190	165	260	250
R. I.	144	160	90	130	95	245	180	Ky.	137	165	100	120	102	200	158
Conn.	149	150	100	147	100	250	180	Tenn.	139	165	110	112	112	195	157
N. Y.	107	108	60	95	57	215	160	Ala.	169	170	150	150	155	220	200
N. J.	124	142	72	110	67	230	155	Miss.	176	200	100	154	164	200	180
Pa.	117	133	75	105	80	194	170	Ark.	157	180	130	136	128	210	185
Ohio	127	155	90	100	89	200	170	La.	168	180	150	150	150	210	170
Ind.	122	145	84	86	80	216	165	Okla.	158	185	123	125	130	225	170
Ill.	126	140	90	88	75	235	175	Tex.	184	190	160	160	170	240	185
Mich.	74	95	34	44	35	162	120	Mont.	86	80	46	65	87	160	120
Wis.	76	95	33	47	36	170	120	Idaho	71	77	31	56	54	145	106
Minn.	69	90	35	39	27	154	115	Wyo.	102	118	50	92	87	160	125
Iowa	115	140	67	77	55	235	170	Colo.	76	73	37	53	60	155	130
Mo.	124	135	92	88	82	225	170	N. Mex.	158	180	145	160	164	200	175
N. Dak.	65	70	31	35	39	150	120	Ariz.	150	140	90	140	150	230	200
S. Dak.	85	107	44	44	48	180	159	Utah	80	85	40	70	74	133	105
Nebr.	96	120	47	70	62	180	160	Nev.	116	120	60	105	106	190	130
Kans.	130	135	92	99	91	235	170	Wash.	93	99	45	70	85	165	95
Del.	112	110	70	102	80	200	140	Oreg.	95	109	52	70	96	150	100
Md.	109	110	60	100	81	194	160	Calif.	121	130	72	112	90	200	132
Va.	108	110	65	87	82	195	155								
W. Va.	129	163	87	105	98	193	167	U. S.	99.1	110.1	58.1	78.1	62.5	186.8	141.7

Division of Crop and Livestock Estimates.

TABLE 203.—*Potatoes: Average l. c. l. price per 100 pounds, to jobbers, at nine markets*

Market. Season beginning April [1]	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
New York:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1919	6.25	4.29	4.37	3.43	3.39	2.79	2.57	2.63	3.09	4.23	4.49	5.49	7.58	7.19
1920	------	9.03	6.93	5.54	2.56	1.83	1.93	1.96	1.82	1.80	1.81	1.51	1.28	1.22
1921	4.41	4.18	1.90	2.22	2.90	2.11	2.09	1.92	2.07	2.33	2.18	2.03	1.79	1.58
1922	4.07	3.27	3.03	1.81	1.04	.95	.96	1.22	1.36	1.39	1.44	1.87	2.09	1.76
1923	7.24	4.13	3.08	3.08	2.57	1.49	1.85	1.67	1.59	1.96	2.01	1.96	2.12	1.73
1924	5.92	4.12	2.34	1.48	1.41	1.37	1.33	1.22	1.26	1.46	1.56	1.21	1.20	1.36
1925	4.03	3.34	2.83	3.18	2.83	2.43	3.23	4.09	4.20	4.61	4.57	4.67	5.64	4.10
1926	8.84	6.29	3.78	2.29	2.38	2.57	2.89	2.99	2.92	------	------	------	------	------
Chicago:														
1919	6.40	5.32	4.38	4.18	[2] 3.99	[2] 2.73	[2] 2.40	[2] 2.90	3.83	5.54	4.80	6.00	[2] 6.98	[2] 7.40
1920	------	9.14	8.38	[2] 6.44	[2] 3.42	[2] 2.40	[2] 1.85	[2] 2.13	[2] 1.58	[2] 1.29	[2] 1.15	[2] 1.25	[2] .98	[2] .87
1921	4.83	4.50	[2] 2.42	[2] 2.33	[2] 3.11	[2] 2.65	[2] 2.00	[2] 1.75	[2] 1.83	[2] 1.98	[2] 1.96	[2] 1.80	[2] 1.69	[2] 1.70
1922	4.16	3.57	[2] 3.03	[2] 2.29	[2] 1.63	[2] 1.17	[2] 1.09	[2] 1.05	[2] .96	[2] 1.02	[2] [illegible]	[2] 1.35	[2] 1.53	[2] 1.13
1923	------	4.80	[2] 3.15	[2] 2.76	[2] 2.18	[2] 1.70	[2] 1.14	[2] 1.24	[2] 1.27	[2] 1.58	[2] 1.71	[2] 1.75	[2] 1.79	[2] 1.50
1924	5.68	4.69	2.65	[2] 1.76	[2] 1.40	[2] 1.32	[2] .97	[2] 1.31	[2] 1.36	[2] 1.47	[2] 1.63	[2] 1.44	[2] .84	[2] 1.18
1925	4.75	3.90	[2] 2.96	[2] 3.28	[2] 2.68	[2] 2.00	[2] 2.67	[2] 3.47	[2] 3.64	[2] 4.08	[2] 3.81	[2] 4.04	[2] 4.62	[2] 3.23
1926	8.59	6.57	[2] 3.91	[2] 2.35	[2] 2.22	[2] 2.45	[2] 2.49	[2] 2.65	[2] 2.47	------	------	------	------	------
Pittsburgh:														
1919	6.59	4.99	4.56	4.07	4.10	3.18	2.74	2.80	3.33	4.51	4.52	5.57	7.00	7.66
1920	------	9.54	7.48	5.98	3.01	2.81	2.33	2.48	1.84	1.60	1.36	1.48	1.11	1.08
1921	4.50	4.37	2.28	2.73	3.43	2.71	2.30	2.10	2.91	2.26	2.13	2.01	1.85	1.61
1922	4.36	3.47	3.19	2.29	1.43	1.39	1.38	1.30	1.11	1.16	1.20	1.67	1.60	1.36
1923	7.30	4.44	3.35	3.44	3.13	2.38	1.67	1.46	1.33	1.67	1.65	1.60	1.74	1.55
1924	6.23	4.23	2.64	1.80	1.58	1.59	1.35	1.24	1.18	1.41	1.39	1.30	1.17	1.36
1925	4.55	3.73	3.24	3.65	3.29	2.22	2.75	3.81	3.92	4.63	4.36	4.51	5.31	3.88
1926	8.94	6.42	4.02	2.46	2.79	2.88	2.80	2.98	2.80	------	------	------	------	------
St. Louis:														
1919	5.98	5.62	3.33	3.62	3.12	2.90	2.71	2.99	------	4.61	4.49	------	7.55	7.57
1920	------	10.75	8.35	6.69	3.69	2.71	2.25	2.33	1.87	1.56	1.39	1.48	1.23	1.22
1921	5.76	3.49	2.77	2.84	3.16	2.83	2.28	1.89	1.93	2.27	2.14	1.98	1.89	1.91
1922	5.87	3.81	2.96	2.49	1.73	1.53	1.26	1.20	1.10	1.16	1.18	1.44	1.59	1.45
1923	7.32	5.56	3.05	------	------	1.94	1.38	1.40	1.44	1.73	1.71	1.71	1.77	1.56
1924	5.60	3.91	2.48	1.86	1.31	1.54	1.27	1.25	1.38	1.55	1.56	1.42	1.08	1.48
1925	4.89	3.86	2.77	3.06	3.00	2.43	2.73	3.73	3.83	4.15	3.99	4.22	4.85	3.76
1926	7.35	6.02	3.83	2.38	2.18	2.69	2.72	2.81	2.71	------	------	------	------	------
Philadelphia:														
1925	4.09	3.51	2.89	3.26	2.95	2.16	2.84	3.99	4.14	4.70	4.47	4.65	5.56	3.87
1926	8.78	6.29	3.73	2.11	2.47	2.66	2.93	3.05	2.98	------	------	------	------	------
Cincinnati:														
1925	5.08	3.56	3.50	3.60	3.19	2.45	2.93	4.15	4.12	4.78	4.50	4.53	5.19	4.02
1926	8.59	6.11	4.02	2.82	2.80	2.76	2.85	2.84	2.76	------	------	------	------	------
Minneapolis:														
1925	------	3.77	3.38	3.38	------	------	------	------	------	------	------	------	------	------
1926	7.00	6.58	3.93	2.68	------	------	------	------	------	------	------	------	------	------
Kansas City:														
1925	5.27	3.50	2.75	------	[2] 2.59	[2] 2.22	[2] 2.75	[2] 3.73	[2] 3.66	[2] 4.12	[2] 3.86	[2] 4.13	[2] 4.68	[2] 3.43
1926	7.02	6.34	3.66	------	------	2.53	2.76	[2] 2.78	[2] 2.66	------	------	------	------	------
Washington:														
1925	4.53	3.77	2.92	3.60	3.38	2.53	2.92	4.21	4.23	4.89	4.64	4.70	5.59	4.54
1926	8.98	6.55	3.96	2.41	2.87	2.94	2.93	3.09	2.98	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from Daily Market Report of Division of Fruits and Vegetables. Average prices as shown are based on stock of U. S. No. 1 grade; they are simple averages of daily range of selling prices. In some cases conversions were made from larger to smaller units or vice versa, in order to obtain comparability.

Earlier data for cities showing prices 1925-1926 are available in 1925 Yearbook, p. 927, Table 275.

[1] Crop movement season extends from April of one year through May of the following year, with irregular quotations continuing through June and July.

[2] Car-lot sales.

TABLE 204.—*Potatoes, "Maine" and "New York State:" Average l. c. l. price per bushel to jobbers at New York, 1909–1926*

Season beginning September	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:									
1909–1913	0.67	0.64	0.66	0.68	0.73	0.73	0.73	0.78	0.77
1914–1920		1.18	1.24	1.28	1.47	1.52	1.55	1.75	1.70
1921–1925	1.18	1.11	1.22	1.26	1.40	1.41	1.41	1.53	1.27
1909	.65	.58	.56	.56	.58	.54	.49	.40	.39
1910	.55	.55	.51	.49	.52	.49	.47	.62	.57
1911	.81	.79	.90	.95	1.12	1.14	1.28	1.38	1.25
1912	.60	.59	.64	.68	.63	.67	.62	.66	.77
1913	.74	.69	.71	.70	.80	.83	.81	.85	.85
1914	.62	.56	.54	.54	.51	.48	.47	.50	.46
1915		.78	.76	.90	1.22	1.21	1.23	1.14	1.12
1916	1.18	1.25	1.69	1.61	1.98	2.67	2.67	3.00	3.18
1917	1.20	1.62	1.37	1.39	1.66	1.47	1.14	1.11	.82
1918	1.58	1.44	1.37	1.50	1.42	1.26	1.11	1.43	1.49
1919	1.51	1.37	1.57	1.79	2.31	2.64	3.33	4.28	4.17
1920		1.25	1.38	1.27	1.16	.88	.88	.78	.66
1921	1.37	1.16	1.25	1.23	1.43	1.35	1.25	1.12	.90
1922	.86	.78	.82	.86	.93	.96	1.21	1.25	1.10
1923	1.46	1.13	1.06	1.05	1.20	1.20	1.17	1.19	1.17
1924	.91	.72	.70	.73	.82	.94	.73	.71	.76
1925	1.28	1.76	2.28	2.42	2.61	2.62	2.68	3.38	2.41
1926	1.40	1.62	1.71	1.70					

Division of Statistical and Historical Research. Compiled from Friday or Saturday issues, New York Producers' Price Current, average of weekly range.

In earlier years New York "State" quotations were included in the general term "State and Western."

Earlier data are available in 1925 Yearbook, p. 928, Table 276.

TABLE 205.—*Spinach for consumption fresh, commercial crop: Acreage, production, and price per bushel, by States, year beginning October, 1924–1926*

State	Acreage			Production			Price per bushel [1]		
	1923–24	1924–25	1925–26	1923–24	1924–25	1925–26	1923–24	1924–25	1925–26
	Acres	*Acres*	*Acres*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Dollars*	*Dollars*	*Dollars*
California	2,130	1,810	2,290	1,836	905	1,832	0.35	0.29	0.27
Idaho			80			29			.[illegible]
Louisiana		2,470	2,900		679	792		.42	.65
Maryland	2,190	2,300	2,130	1,183	1,150	479	.50	.34	.63
Missouri	820	1,000	1,200	287	360	432	.36	.53	.60
New Jersey	1,300	1,800	1,800	637	783	558	.75	.87	.60
South Carolina	1,500	1,000	2,000	384	480	632	.50	1.05	.72
Texas	8,700	14,440	16,770	2,740	4,751	5,115	.77	.63	.48
Virginia	8,000	8,500	8,050	3,296	3,060	1,731	.89	.67	.73
Total or average	24,640	33,320	37,220	10,363	12,168	11,600	.68	.60	.53

Division of Crop and Livestock Estimates.

[1] Average for season.

TABLE 206.—*Spinach for canning, commercial crop: Acreage, production, and price per ton, by States, 1924–1926*

State	Acreage			Production			Price per ton		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Dollars*	*Dollars*	*Dollars*
California	8,290	9,690	9,590	41,400	29,100	46,000	17.61	17.64	16.15
Maryland	1,460	1,500	1,720	4,700	4,500	3,600	48.12	37.50	3[illegible].62
Total or average	9,750	11,190	11,310	46,100	33,600	49,600	20.72	20.30	17.20

Division of Crop and Livestock Estimates.

TABLE 207.—*Spinach: Car-lot shipments by State of origin, August, 1920–July, 1926*

State	Crop movement season [1]					
	1920	1921	1922	1923	1924	1925 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Missouri	126	57	28	84	152	87
Maryland	391	372	663	818	846	653
Virginia	2,475	2,212	3,208	3,105	2,946	2,669
South Carolina		161	422	161	501	614
Texas	1,463	1,455	2,433	3,038	3,285	4,513
California	149	302	473	70	241	296
Other States	64	132	126	341	254	346
Total	4,668	4,691	7,353	7,617	8,175	9,178

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop-movement season extends from Aug. 1 of one year through July of the following year.
[2] Preliminary.

SWEET POTATOES

TABLE 208.—*Sweet potatoes: Acreage, production, and December 1 price, United States, 1909–1926*

Year	Acreage	Average yield per acre	Production	Price per bushel received by producers Dec. 1	Year	Acreage	Average yield per acre	Production	Price per bushel received by producers Dec. 1
	1,000 acres	*Bushels*	*1,000 bushels*	*Cents*		*1,000 acres*	*Bushels*	*1,000 bushels*	*Cents*
Average:									
1909–1913	619	92.7	57,355	71.2	1918	940	93.5	87,924	135.2
1914–1920	843	97.6	82,281	105.7	1919	941	103.2	97,126	134.4
1921–1925	929	90.8	84,291	99.8	1920	992	104.8	103,925	113.4
1909	641	90.1	57,764	68.5	1921	1,066	92.5	98,654	88.1
1910	641	93.5	59,938	67.1	1922	1,117	97.9	109,394	77.1
1911	605	90.1	54,538	75.5	1923	993	97.9	97,177	97.9
1912	583	95.2	55,479	72.6	1924	688	78.4	53,912	128.8
1913	625	94.5	59,057	72.6	1925	77.9	80.0	62,319	136.4
1914	603	93.8	56,574	73.0	1926 [1]	830	100.8	83,658	95.7
1915	731	103.5	75,639	62.1					
1916	774	91.7	70,955	84.8					
1917	919	91.2	83,822	110.8					

Division of Crop and Livestock Estimates.

[1] Preliminary

TABLE 209.—*Sweet potatoes: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
New Jersey	18	15	16	17	2, 196	2, 100	1, 872	2, 465
Pennsylvania	2	1	1	1	260	117	115	110
Ohio	3	3	3	3	336	285	345	315
Indiana	3	2	2	3	354	230	216	320
Illinois	8	8	12	13	880	864	1, 056	1, 430
Iowa	4	3	3	3	280	240	327	309
Missouri	14	9	10	10	1, 512	900	950	1, 120
Kansas	3	3	3	4	321	339	348	516
Delaware	9	7	8	9	1, 608	910	880	1, 251
Maryland	9	8	9	11	1, 170	1, 120	1, 161	1, 815
Virginia	44	35	37	43	5, 280	4, 200	3, 996	5, 375
West Virginia	3	3	3	3	390	330	276	330
North Carolina	100	80	80	84	10, 500	7, 360	7, 040	7, 560
South Carolina	94	50	52	52	9, 118	3, 400	2, 860	4, 160
Georgia	137	100	110	110	11, 506	7, 000	5, 170	9, 460
Florida	30	25	29	28	2, 940	2, 100	2, 465	2, 800
Kentucky	20	12	14	17	2, 060	960	1, 260	2, 040
Tennessee	35	30	36	45	3, 850	2, 850	3, 240	5, 535
Alabama	113	60	65	65	11, 752	4, 380	4, 550	6, 500
Mississippi	101	50	62	60	9, 898	2, 550	5, 952	6, 240
Arkansas	40	27	36	39	3, 800	2, 187	3, 060	4, 212
Louisiana	78	60	72	79	7, 020	3, 000	5, 760	7, 110
Oklahoma	30	18	20	24	2, 700	1, 566	1, 880	2, 520
Texas	86	70	84	92	6, 880	3, 900	6, 132	8, 556
New Mexico	1	1	1	1	134	120	140	135
Arizona	2	2	2	2	340	230	260	300
California	6	6	9	12	690	564	1, 008	1, 164
United States	993	688	779	839	97, 177	53, 912	62, 319	83, 658

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 210.—*Sweet potatoes: Yield per acre, by States, 1921–1926*

State	Average 1921–1925	1921	1922	1923	1924	1925	1926	State	Average 1921–1925	1921	1922	1923	1924	1925	1926
	Bus.	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*		*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*
N. J	133	110	175	122	140	117	145	Fla	87	85	85	98	84	85	100
Pa	125	124	140	130	117	115	110	Ky	96	104	101	108	80	90	120
Ohio	110	107	120	112	95	115	105	Tenn	98	100	95	110	95	90	123
Ind	120	132	125	118	115	108	110	Ala	86	90	95	104	73	70	100
Ill	102	110	95	110	108	88	110	Miss	86	80	105	98	51	96	104
Iowa	88	104	78	70	80	109	103	Ark	89	105	80	95	81	85	108
Mo	100	100	95	108	100	95	112	La	81	94	92	90	50	80	90
Kans	113	125	104	107	113	116	129	Okla	89	98	76	90	87	94	105
Del	122	100	156	112	130	110	139	Tex	75	82	83	80	57	73	93
Md	130	100	158	130	140	129	165	N. Mex	125	120	112	134	120	140	135
Va	116	95	135	120	120	108	125	Ariz	140	125	150	170	125	130	150
W. Va	116	115	134	130	110	92	110	Calif	110	120	110	115	94	112	97
N. C	100	101	113	105	92	88	90								
S. C	81	95	92	97	68	55	80	U. S	89. 3	92. 5	97. 9	97. 9	78. 4	80. 0	100. 8
Ga	74	85	83	84	70	47	86								

Division of Crop and Livestock Estimates.

TABLE 211.—*Sweet potatoes: Car-lot shipments by State of origin, July, 1920–June, 1926*

State	Crop movement season [1]					
	1920	1921	1922	1923	1924	1925 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New Jersey [3]	2,392	2,196	2,858	1,528	1,894	1,365
Delaware	1,877	1,722	2,632	1,549	1,750	1,742
Maryland	1,363	1,286	1,750	1,123	1,155	1,520
Virginia	4,839	5,800	6,633	5,874	5,213	4,750
North Carolina	823	1,022	679	563	816	1,490
South Carolina	56	135	235	155	120	230
Georgia	1,030	1,400	781	610	1,018	674
Florida	95	110	[4] 128	59	175	242
Tennessee [3]	924	1,578	1,495	726	1,137	2,592
Alabama	579	591	537	[illegible]	649	664
Mississippi	93	181	116	61	36	156
Arkansas	568	584	240	263	371	476
Louisiana	772	893	1,033	468	558	2,340
Oklahoma	91	147	85	110	107	216
Texas	632	759	974	535	221	474
California	856	1,000	982	684	466	1,161
Other States [3]	216	479	408	345	381	745
Total [3]	17,206	19,383	[4] 21,566	14,530	16,067	20,837

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from July 1 of one year through June of the following year.
[2] Preliminary.
[3] Figures for certain States include shipments in July of succeeding crop year as follows: New Jersey—1920, 15 cars; 1922, 4 cars; 1924, 4 cars; Arkansas—1921, 1 car; Kentucky—1921, 1 car; New Mexico—1921, 5 cars; Tennessee—1921, 17 cars; 1924, 3 cars; 1925, 11 cars.
[4] Florida includes 2 cars in June, 1922.

TABLE 212.—*Sweet potatoes: Estimated price per bushel, received by producers, United States, 1910–1926*

Year beginning July	July 15	Aug 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted av.
Average:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1910–1913	95.0	97.9	89.0	79.2	72.8	75.7	83.0	87.0	92.0	99.6	102.0	97.1	85.1
1914–1920	128.9	139.8	129.0	111.7	101.4	102.4	112.1	118.9	128.2	138.8	139.8	137.3	118.8
1921–1925	141.6	156.1	138.4	124.7	109.2	113.1	120.4	130.0	139.1	147.4	149.1	147.2	129.7
1910	73.5	82.9	79.5	75.7	67.8	70.9	79.1	81.6	87.3	95.0	103.0	93.8	78.7
1911	104.1	107.4	97.9	85.6	76.2	79.0	86.9	93.5	102.4	117.4	118.6	111.4	92.2
1912	113.0	102.5	88.9	79.9	73.7	77.2	83.7	87.0	90.8	94.3	93.2	90.8	85.6
1913	89.4	98.8	89.8	78.0	73.4	75.8	82.5	86.1	87.3	91.9	92.7	92.5	84.0
1914	94.5	98.4	90.1	79.3	72.3	74.9	81.0	85.0	90.8	109.8	98.1	97.6	84.6
1915	93.1	97.2	80.0	69.7	62.9	65.0	72.7	76.4	80.1	81.0	78.9	83.9	75.4
1916	87.5	90.0	88.1	80.3	80.3	86.4	92.9	100.0	115.5	126.0	132.6	135.8	92.9
1917	124.4	126.3	120.3	110.5	105.6	110.8	123.1	129.8	149.2	158.1	153.2	134.0	122.3
1918	142.1	151.6	164.3	152.4	137.4	131.8	137.8	149.2	157.2	176.2	174.4	162.7	150.0
1919	159.7	195.4	174.6	150.9	135.1	135.6	151.1	163.6	179.2	193.9	190.7	205.2	161.7
1920	200.7	210.8	190.0	138.7	116.5	112.3	126.3	122.1	125.5	135.7	136.8	141.9	144.8
1921	151.2	154.2	118.2	104.0	91.5	95.3	102.3	106.9	114.3	116.0	117.1	120.7	110.9
1922	125.3	127.5	106.0	90.4	79.0	84.8	92.5	96.9	100.1	103.8	107.9	107.4	97.4
1923	112.1	151.3	133.0	114.8	101.0	103.8	112.5	123.7	129.0	140.4	139.2	138.9	121.7
1924	130.7	151.4	157.0	145.1	130.3	140.1	145.5	160.2	180.8	196.2	189.1	170.2	152.4
1925	188.7	196.3	177.4	169.4	144.4	141.5	149.3	162.4	171.4	180.4	192.2	198.8	165.9
1926	185.6	189.0	153.9	110.6	88.5	94.0	------	------	------	------	------	------	------

Divison of Crop and Livestock Estimates.

TABLE 213.—*Sweet potatoes: Estimated price per bushel, received by producers, December 1, average 1921–1925, annual, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
N. J.	156	170	72	145	155	240	120
Pa.	158	180	111	140	150	210	130
Ohio	167	178	135	150	163	210	150
Ind.	145	150	120	125	142	190	145
Ill.	127	90	105	110	139	190	135
Iowa	177	175	140	150	190	230	200
Mo.	121	100	105	108	125	165	130
Kans.	130	115	105	125	135	170	135
Del.	118	110	50	115	126	190	65
Md.	120	140	50	115	127	170	75
Va.	111	125	87	106	110	130	100
W. Va.	162	180	140	148	141	200	160
N. C.	100	97	80	98	104	120	100
S. C.	100	90	71	86	104	147	100
Ga.	85	63	61	76	100	125	80
Fla.	115	96	94	116	130	140	125
Ky.	125	115	110	120	128	153	108
Tenn.	111	95	78	100	140	140	70
Ala.	96	73	75	83	125	125	85
Miss.	101	74	69	91	173	160	95
Ark.	103	82	89	92	127	125	95
La.	99	65	61	95	158	115	90
Okla.	124	106	118	113	150	184	100
Tex.	117	85	85	114	158	142	95
N. Mex.	216	260	200	200	255	165	100
Ariz.	203	182	175	210	238	210	155
Calif.	149	125	67	165	218	170	110
U. S.	105.7	88.1	77.1	97.9	128.8	136.4	95.7

Division of Crop and Livestock Estimates.

TABLE 214.—*Sweet potatoes: Average l. c. l. price per bushel to jobbers at six markets*

Market. Season beginning August	August[1]		September[1]		October average	November average	December average	January average	February average	March average	April[2]		May[2]	
	Range	Average	Range	Average							Range	Average	Range	Average
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
New York:														
1920	2.31-3.08	2.70	1.04-2.77	1.76	1.36	1.23	1.56	1.76	1.82	2.40	1.50-2.75	2.32	2.00-3.00	2.73
1921	1.23-2.00	1.51	.88-2.25	1.48	1.26	1.36	1.67	2.02	1.98	1.92	1.50-2.50	2.27	1.25-2.50	2.23
1922			.50-1.75	1.00	.70	.73	.96	1.03	1.01	.94	.75-2.00	1.39		
1923			.46-1.75	1.16	1.20	1.95	2.51	2.94	3.38	3.62	3.40-4.50	3.98		
1924			1.08-3.25	1.98	1.47	1.88	2.47	2.75	2.74	2.63				
1925	1.08-2.00	1.53	.92-2.50	1.70	1.68	1.70	2.23	2.61	2.59	2.96	1.23-4.00	3.42		
1926	1.46-3.00	2.21	.69-3.00	1.47	.97	.98	1.24							
Chicago:														
1920	2.00-3.00	2.61	1.35-2.85	2.05	1.85	1.96	2.21	2.20	2.29	2.35	1.75-3.25	2.40	1.75-2.50	2.13
1921	1.14-2.75	2.01	.80-2.50	1.70	1.57	1.48	1.65	1.81	1.89	1.93	1.00-2.50	1.69	.75-2.40	1.29
1922			.69-2.75	1.44	1.00	1.22	1.26	1.43	1.44	1.47	1.00-2.50	1.62		
1923			1.08-2.35	1.67	1.52	2.03	2.73	3.09	3.31	3.76	3.50-4.50	4.04		
1924			1.38-4.00	2.29	1.88	2.33	2.80	2.92	3.26	2.94				
1925	1.25-3.50	2.04	1.00-3.00	2.04	2.02	2.25	2.42	2.37	2.29	2.40	2.00-4.00	2.98		
1926	1.75-2.75	2.23	.75-3.50	1.72	1.30	1.37	1.69							
Pittsburgh:														
1925	1.15-2.75	1.65	1.08-2.75	1.79	1.88	2.04	2.17	2.52	2.59	2.52	1.75-3.25	2.62		
1926	2.00-3.08	2.57	.92-2.75	1.55	1.13	1.19	1.34							
St. Louis:														
1925	1.15-1.90	1.56	1.00-2.00	1.43	1.38	1.57	1.90	[3] 1.87	[3] 1.66	[3] 1.74	[3] 1.00-2.25	[3] 2.00		
1926	1.65-2.25	2.12	.90-1.85	1.12	.94	.98	1.12							
Cincinnati:														
1925	1.00-1.75	1.45	1.00-1.65	1.44	1.47	1.68	1.63	1.94	1.77	1.85	1.55-2.25	2.02		
1926	1.65-2.50	2.16	.90-2.15	1.22	.91	.90	1.12							
Kansas City:														
1925	1.75-2.00	1.79	1.25-1.75	1.53		1.42	1.50	[3] 1.75	[3] 1.66	[3] 1.68	1.75-2.00	1.85		
1926	2.00	2.00	.75-2.00	1.29	1.04	1.13	1.12							

Division of Statistical and Historical Research. Compiled from Daily Market Report of Division of Fruits and Vegetables.

Average prices as shown are based on stock of good merchantable quality and condition; they are simply averages of daily range of selling prices. In some cases conversions have been made from larger to smaller units or vice versa, in order to obtain comparability.

Data for 1920-1924, for cities showing prices for 1925-1926 are available in 1925 Yearbook, p. 934, Table 288.

[1] Quotations began Aug. 23, 1920 and 1921; Sept. 1, 1922; Sept. 18, 1923; Sept. 2, 1924; Aug. 25, 1925; Aug. 16, 1926.
[2] Last reported quotations of season May 26, 1921 and 1922; May 4, 1923; Apr. 15, 1924; Apr. 3, 1925; Apr. 16, 1926.
[3] Kiln dried.

TABLE 215.—*Tomatoes for consumption fresh, commercial crop: Acreage, production, and price per bushel, by States, 1924–1926*

State	Acreage			Production			Price per bushel [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Dollars*	*Dollars*	*Dollars*
Early:									
California (Imperial)	600	860	1,000	90	64	118	4.53	3.04	3.06
Florida	50,070	33,470	20,700	3,956	2,811	2,029	3.09	3.15	3.15
Georgia	2,000	1,040	2,220	66	74	133	1.43	2.55	2.50
Louisiana		1,020	1,520		102	116		2.99	1.81
Mississippi	15,300	11,100	14,200	1,683	1,310	1,406	1.99	3.25	3.28
South Carolina	2,220	2,650	3,300	202	217	370	1.74	2.40	3.33
Texas [2]	9,460	10,780	13,300	870	884	1,277	2.54	2.74	2.85
Intermediate:									
Arkansas		480	1,180		43	132		3.26	1.26
Illinois (Union County)	830	2,000	1,300	108	163	65	1.71	1.74	1.18
New Jersey	13,000	14,000	12,000	3,016	3,500	2,040	1.92	.85	.95
Ohio (Washington County)	800	810	920	170	188	166	2.23	3.54	1.69
Tennessee	2,690	5,000	8,900	336	635	936	2.62	2.88	1.99
Late:									
California (except Imperial)	10,900	11,300	16,440	1,406	2,418	2,729	2.36	1.69	1.19
Colorado	350	580	420	80	176	113	1.13	1.20	.76
Delaware	380	390	300	50	74	17	.70	.65	.60
Illinois (except Union County)	4,000	3,280	2,260	856	797	405	2.17	2.46	.99
Indiana	6,560	7,480	4,350	866	1,414	592	.97	1.89	.67
Iowa	620	410	450	75	59	53	1.19	1.20	.50
Kentucky	4,130	4,090	1,040	735	585	115	1.10	1.37	1.39
Maryland	7,620	3,180	3,220	952	566	206	1.58	.89	.91
Michigan	580	860	300	124	184	52	1.64	1.35	1.33
Missouri	6,750	6,910	1,070	648	864	88	1.82	1.38	.86
New York	2,920	2,380	1,740	885	595	311	.96	1.25	.85
Ohio (except Washington County)	6,000	5,850	1,500	1,242	712	256	1.45	1.26	1.16
Pennsylvania	1,350	2,570	370	251	550	40	1.26	.81	.59
Utah		400	700		140	105		1.20	.75
Virginia	1,390	3,930	1,500	259	491	188	1.42	.71	.63
Total or average	150,520	133,820	115,300	18,876	19,621	14,053	2.07	1.89	1.39

Division of Crop and Livestock Estimates.

[1] Average for season. [2] Includes fall crop of previous year.

TABLE 216.—*Tomatoes for manufacture, commercial crop: Acreage, production, and price per ton, by States, 1924–1926*

State	Acreage			Production			Price per ton		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
	Acres	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Dollars*	*Dollars*	*Dollars*
Arkansas	13,400	20,340	11,630	53,600	61,000	29,100	12.50	13.65	11.86
California	26,000	30,000	32,250	148,200	186,900	206,400	16.94	16.29	15.61
Colorado	2,000	3,040	2,350	14,400	25,800	17,600	10.25	11.50	12.00
Delaware	18,000	20,000	11,700	54,000	108,000	29,200	18.30	16.27	13.97
Illinois	6,000	7,650	5,270	25,200	29,100	21,100	13.72	12.33	14.57
Indiana	59,000	67,340	49,990	290,600	303,000	175,000	12.41	12.79	12.60
Iowa	3,500	3,660	3,000	9,800	13,500	9,900	12.90	14.55	12.88
Kentucky	6,200	9,550	6,950	24,800	38,200	20,800	13.48	13.46	12.25
Maryland	45,270	49,800	37,090	149,400	249,000	86,800	19.50	15.97	13.90
Michigan	2,300	2,000	1,800	13,100	13,600	9,000	10.29	11.91	11.80
Missouri	27,000	39,150	25,620	67,500	137,000	64,000	13.05	13.52	11.85
New Jersey	28,000	32,000	32,000	140,000	224,000	153,600	20.36	17.00	15.80
New York	11,700	13,550	9,850	74,900	92,100	49,200	16.06	16.31	15.30
Ohio	9,000	8,500	8,000	48,600	51,400	38,400	11.57	13.09	11.20
Pennsylvania	2,500	4,780	3,370	11,500	25,800	10,100	14.98	16.00	13.40
Tennessee	8,500	11,820	8,200	26,400	28,600	24,600	13.99	15.39	13.42
Utah	4,800	6,860	2,630	30,700	123,500	18,400	10.00	11.98	10.00
Virginia	12,500	15,730	6,000	45,000	55,100	21,000	16.22	16.19	14.30
Other States	3,600	4,100	3,040	10,800	20,500	9,100	15.00	15.24	13.60
Total or average	289,270	349,930	269,650	1,148,500	1,772,200	995,300	15.57	14.77	13.93

Division of Crop and Livestock Estimates.

TABLE 217.—*Tomatoes: Car-lot shipments by State of origin, 1920–1926*

State	1920	1921	1922	1923	1924	1925	1926[1]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	1,945	1,073	1,902	1,261	954	1,024	577
New Jersey	2,798	2,121	1,930	1,648	2,150	1,907	2,025
Ohio	450	411	558	956	1,035	1,286	1,042
Indiana	1,265	552	1,332	1,185	1,479	1,889	1,476
Illinois	450	155	229	250	230	539	410
Delaware	185	207	413	327	26	32	3
Maryland	194	110	242	271	66	313	268
South Carolina		59	145	431	421	568	444
Florida	4,144	5,795	10,261	9,791	9,128	7,163	4,139
Kentucky	468	341	153	121	546	498	284
Tennessee	805	370	920	501	985	1,393	2,374
Mississippi	1,393	1,945	3,441	2,144	3,776	3,149	3,492
Texas	1,395	2,025	1,886	1,091	[illegible]	2,390	2,883
Utah	261	100	378	369	380	1,457	258
California	2,008	1,819	2,346	3,296	2,788	2,961	4,279
Other States	591	342	587	363	1,159	1,652	1,518
Total	18,352	17,425	26,723	24,006	26,817	28,221	25,472

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Preliminary.

TABLE 218.—*Tomatoes: Monthly range and average l. c. l. price, per 4-basket carrier, to jobbers at nine markets*

Market and season[1]	June		July	
	Range	Average	Range	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*
Chicago:				
1920	1.25–4.00	2.54	0.75–2.00	1.43
1921	.75–2.15	1.66	.50–1.75	1.05
1922	.40–2.75	1.19		
1923	1.00–3.50	2.08	.75–1.60	1.21
1924	.50–1.25	.91	1.00–2.15	1.64
1925	.75–2.25	1.51	1.25–1.75	1.65
1926	.40–1.75	1.29		
New York:				
1920	1.50–3.00	2.07	1.00–2.50	1.84
1921	1.25–2.50	1.67	.90–1.50	1.24
1922	.40–2.65	1.25		
1923	2.00–3.00	2.35	1.00–2.00	1.50
1924	.60–1.35	1.03	1.25–2.15	1.55
1925	1.10–2.00	1.53	1.25–1.90	1.63
1926	.80–1.75	1.23		
Cincinnati:				
1925	1.00–2.00	1.58	1.50–1.75	1.69
1926	.75–1.85	1.29		

Market and season[1]	June		July	
	Range	Average	Range	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*
Kansas City:				
1925	1.25–3.00	1.54	2.50–3.50	3.00
1926	.75–2.00	1.33		
Minneapolis:				
1925	1.10–2.75	1.79	1.35–2.00	1.73
1926	.75–2.15	1.48		
Philadelphia:				
1925	1.25–2.00	1.58	1.25–2.00	1.50
1926	.75–2.00	1.30		
Pittsburgh:				
1925	1.15–2.00	1.58	1.40–1.75	1.60
1926	.70–2.00	1.26		
St. Louis:				
1925	1.00–1.85	1.49	1.85–2.50	2.14
1926	.50–2.00	1.40		
Washington:				
1925	1.40–2.15	1.76	1.50–1.85	1.66
1926	.60–2.25	1.51		

Division of Statistical and Historical Research. Compiled from Daily Market Report of Division of Fruits and Vegetables. Average prices as shown are based on stock of good merchantable quality and condition, fancy count; they are simple averages of daily range of selling prices.

Earlier data for cities showing prices for 1925–26 are available in 1925 Yearbook, p. 938, Table 294.

[1] Quotations usually begin about June 1. Last reported quotations of season July 20, 1920; July 16, 1921; June 30, 1922; July 5, 1923; July 9, 1924; July 8, 1925; July 3, 1926.

TABLE 219.—*Tomatoes, canned: Production in the United States, 1917–1926*

(Thousand cases,[1] i. e., 000 omitted)

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
New York	553	396	437	515	214	340	266	325	389	302
New Jersey	380	667	60	517	116	337	412	186	418	204
Pennsylvania	[2] 488	[2] 441	[2] 384	[2] 680	[2] 186	[2] 644	258	150	338	118
Ohio	107	357	172	142	71	179	174	133	179	120
Indiana	398	968	876	778	530	1,312	717	1,050	1,955	900
Missouri	704	353	439	715	136	775	839	871	1,836	895
Delaware	1,381	879	189	553	176	590	1,216	803	1,272	228
Maryland	5,934	6,649	2,529	3,347	1,656	3,205	5,722	3,825	6,175	1,901
Virginia [3]	1,170	1,547	953	1,162	217	891	963	1,116	1,138	572
Kentucky [2]							59	136	275	223
Tennessee [2]							176	386	382	280
Arkansas [4]							270	768	1,168	558
Colorado [5]	213	306	290	218	62	168	182	180	309	183
Utah	513	953	594	444	132	664	584	417	1,353	235
California	2,603	1,790	3,052	1,773	339	1,701	2,397	1,767	1,839	2,347
Other States	632	576	835	524	182	732	437	406	744	389
United States	15,076	15,882	10,810	11,368	4,017	11,538	14,672	12,519	19,770	9,455

Division of Statistical and Historical Research. Compiled from National Canners' Association data.

[1] Stated in cases of 24 No. 3 cans
[2] Previous to 1923, Pennsylvania, Kentucky, and Tennessee composed one group.
[3] Includes West Virginia
[4] Previous to 1923, included in "other States."
[5] Includes Washington.

TABLE 220.—*Watermelons, commercial crop: Acreage, production, and price per car, by States, 1924–1926*

State	Acreage			Production			Price per car [1]		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
Early:	*Acres*	*Acres*	*Acres*	*Cars* [2]	*Cars* [2]	*Cars* [2]	*Dollars*	*Dollars*	*Dollars*
Alabama	10,940	10,030	11,030	3,173	2,618	3,264	207	188	93
Arizona	1,230	1,100	1,200	184	352	402	247	200	156
California (Imperial)	3,800	4,000	6,000	2,280	3,000	4,560	233	250	100
Florida	28,280	22,100	24,150	6,929	8,288	10,843	247	408	255
Georgia	45,890	45,890	53,600	16,750	15,878	20,958	118	244	121
Mississippi	800	810	1,240	212	304	217	152	223	89
North Carolina	4,850	4,100	4,880	728	1,304	1,484	144	196	77
South Carolina	15,070	11,010	12,720	6,706	4,608	5,215	72	166	88
Texas	30,800	32,020	34,900	6,930	5,636	6,980	178	228	222
Late:									
Arkansas	950	1,480	2,700	380	432	540	165	226	121
California (other)	8,040	6,370	6,820	3,851	2,548	3,008	161	197	112
Colorado	330	300	300	114	97	108	128	168	95
Delaware	1,000	1,900	2,300	280	697	580	178	116	105
Illinois	3,120	2,820	3,200	780	818	816	109	159	86
Indiana	3,540	3,440	3,440	1,062	1,204	980	216	172	118
Iowa	2,840	1,880	1,640	781	658	420	210	165	84
Maryland	2,000	1,920	1,800	500	691	648	122	120	76
Missouri	9,670	12,200	17,500	2,418	3,575	5,688	221	135	114
New Jersey	2,400	2,400	2,200	948	1,200	462	216	214	210
Oklahoma	3,800	4,000	4,000	950	1,260	1,300	165	185	186
Virginia	3,040	3,100	3,100	608	976	781	191	173	141
Washington	820	840	840	287	294	307	139	135	118
Total or average	183,260	173,710	199,560	56,851	56,498	69,551	160	236	146

Division of Crop and Livestock Estimates.

[1] Average for season. [2] Cars of 1,000 melons.

TABLE 221.—*Watermelons: Car-lot shipments by State of origin, April, 1920–December, 1926*

State	Crop movement season [1]						
	1920	1921	1922	1923	1924	1925	1926 [2]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Indiana	741	721	542	484	378	646	389
Illinois	278	477	289	433	188	339	166
Iowa	337	884	684	586	50	289	117
Missouri	2,789	3,157	2,752	1,783	1,432	3,293	2,915
Delaware	188	498	289	245	259	348	181
Maryland	463	741	379	566	427	531	399
Virginia	318	371	156	166	99	375	366
North Carolina	817	1,657	993	1,542	664	991	1,130
South Carolina	4,823	4,490	4,677	4,009	4,[illegible]	4,232	5,290
Georgia	9,980	15,041	13,418	7,222	16,347	14,754	19,391
Florida	5,175	5,963	11,341	4,317	[3] 6,355	7,190	8,277
Alabama	1,332	1,475	1,941	1,256	2,278	1,880	1,875
Arkansas	300	605	325	190	352	411	479
Oklahoma	567	559	308	66	205	141	248
Texas	5,195	4,347	4,203	5,317	6,513	3,157	6,223
Washington	212	154	252	175	215	259	188
California	3,390	3,773	4,302	4,054	4,305	4,522	6,293
Other States	409	836	774	618	706	826	778
Total	37,314	45,749	47,625	33,029	[3] 45,745	44,184	54,705

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in car lots include those by boat reduced to car-lot basis.

[1] Crop movement season extends from Apr. 1 through December of a given year.
[2] Preliminary.
[3] Includes 2 cars in January.

TABLE 222.—*Truck crops, commercial crop: Acreage and production, United States, 1920–1926*

ACREAGE

Crop	1920	1921	1922	1923	1924	1925	1926
	Acres	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*
Asparagus	30,880	32,140	32,860	42,050	50,280	66,000	85,640
Beans, snap	37,920	34,830	49,550	61,280	84,600	98,330	91,470
Cabbage	123,760	104,580	133,830	104,880	118,090	118,710	125,760
Cantaloupes	74,820	77,450	103,300	84,160	95,500	93,000	103,160
Carrots				9,770	11,480	14,610	16,030
Cauliflower	8,760	8,510	9,250	11,580	13,000	15,140	22,560
Celery	15,790	14,880	19,190	20,350	22,710	22,830	24,270
Corn, sweet	261,750	136,280	197,600	252,590	302,790	393,910	311,640
Cucumbers	66,450	80,610	82,200	91,960	121,500	139,060	107,410
Eggplant		2,420	2,210	2,470	2,690	3,490	3,220
Lettuce	32,010	31,460	44,900	57,990	68,660	86,020	106,100
Onions	64,940	57,070	63,250	61,910	65,090	65,050	74,560
Peas, green	144,190	133,850	171,800	207,210	254,270	260,310	255,220
Peppers		7,530	7,880	8,030	11,160	13,700	15,430
Potatoes, early	269,960	265,920	311,930	281,740	312,250	298,780	315,580
Spinach	15,730	22,810	23,760	30,550	34,390	44,510	48,530
Strawberries	93,410	109,590	132,800	148,360	156,250	132,550	140,300
Tomatoes	335,300	160,010	345,420	379,280	439,790	483,750	375,950
Watermelons	149,290	155,860	211,060	157,350	183,260	173,710	199,560

TABLE 222.—*Truck crops, commercial crop: Acreage and production, United States, 1920–1926*—Continued

PRODUCTION

Crop	1920	1921	1922	1923	1924	1925	1926
Asparagus, crates	3,403,000	3,287,000	4,041,000	5,854,000	5,480,000	6,323,000	7,645,000
Beans, snap......tons	72,100	66,800	79,600	100,300	110,700	138,000	104,300
Cabbage......do	1,105,100	687,000	1,089,000	805,700	1,056,700	946,200	997,400
Cantaloupes......crates	11,444,000	11,549,000	12,805,000	11,745,000	14,968,000	14,258,000	14,038,000
Carrots......bushels	----------	----------	----------	3,184,000	4,084,000	4,158,000	4,355,000
Cauliflower......crates	2,343,000	2,298,000	2,889,000	3,322,000	2,741,000	3,393,000	5,550,000
Celery......do	4,573,000	4,542,000	5,030,000	5,477,000	6,741,000	6,685,000	6,523,000
Corn, sweet......tons	595,300	360,600	474,700	608,300	527,800	1,014,100	803,000
Cucumbers......bushels	5,386,000	8,267,000	8,867,000	7,671,000	7,507,000	12,217,000	8,801,000
Eggplant......do	----------	882,000	856,000	850,000	795,000	904,000	786,000
Lettuce......crates	7,928,000	7,799,000	8,837,000	11,672,000	13,221,000	16,076,000	17,236,000
Onions......bushels	21,343,000	14,165,000	18,763,000	17,306,000	19,146,000	19,423,000	20,625,000
Peas, green......tons	162,700	125,800	181,700	180,900	274,400	242,400	253,700
Peppers......bushels	----------	2,874,000	2,654,000	2,953,000	3,674,000	3,455,000	3,933,000
Potatoes, early......do	30,719,000	30,193,000	36,198,000	26,245,000	40,203,000	30,466,000	34,471,000
Spinach......tons	49,600	61,700	67,900	95,800	108,300	106,600	119,200
Strawberries......quarts	155,588,000	189,670,000	260,403,000	256,409,000	284,716,000	211,396,000	256,411,000
Tomatoes......tons	1,539,400	724,200	1,658,000	1,609,000	1,677,000	2,821,600	1,388,800
Watermelons......number	58,330,000	61,774,000	71,128,000	42,734,000	56,851,000	56,418,000	69,551,000

Division of Crop and Livestock Estimates.

TABLE 223.—*Vegetable seed: Imports (for consumption) into the United States 1918–1926*

[Thousand pounds—i. e., 000 omitted]

Year ended Dec. 31	Beet, sugar	Beet, all other	Cabbage	Carrot	Kale	Onions [1]	Parsley	Parsnips	Radish	Spinach	Turnip [2]	Rutabaga	Mangelwurzel [1]
1918	4,298	352	115	28	10	------	65	9	82	1,067	1,752	------	------
1919	9,830	161	169	16	19	------	53	44	112	367	1,810	------	------
1920	23,446	238	391	69	77	------	180	17	320	1,139	1,847	------	------
1921	7,726	257	253	48	40	------	151	57	213	1,222	2,242	------	------
1922	5,603	272	181	37	25	7	144	40	272	1,927	1,299	[3] 61	79
1923	15,671	335	181	42	35	118	68	19	350	2,017	776	152	125
1924	11,082	423	210	134	50	104	147	58	651	2,686	1,350	201	298
1925	12,472	421	322	53	71	209	378	44	758	2,958	1,435	335	345
1926 [4]	10,790	390	327	58	65	361	296	42	1,011	2,472	1,914	386	412

Division of Statistical and Historical Research. Compiled from Foreign Commerce and Navigation of the United States, 1918–1925, and official records of the Bureau of Foreign and Domestic Commerce, 1926.

[1] Not separately classified prior to 1922.
[2] Includes rutabaga seed prior to Sept. 22, 1922.
[3] Included with turnip prior to 1922.
[4] Preliminary.

TABLE 224.—*Fruits and vegetables: Unloads of 10 commodities at 11 markets in car lots, 1920–1926*

Commodity and year	New York	Chicago	Philadelphia	Pittsburgh	St. Louis	Cincinnati	Minneapolis	Kansas City	Washington	Cleveland	Detroit	Total
Apples:	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
1920	10,528	7,081	3,198	2,792	1,975	1,617	464	1,006	561	1,698	963	31,883
1921	11,984	6,634	3,416	2,808	1,856	1,810	422	1,002	369	1,184	1,080	32,565
1922	12,764	6,575	2,539	3,020	2,111	1,257	712	775	454	1,901	1,402	33,510
1923	15,538	10,364	3,211	3,005	2,736	1,659	681	1,507	674	1,861	1,782	43,018
1924	14,280	6,605	2,996	2,799	1,960	1,531	748	701	556	1,614	1,234	35,024
1925	13,761	7,774	2,510	2,570	1,950	1,295	873	1,421	557	1,570	2,126	36,407
1926	14,606	7,834	2,622	2,628	1,097	1,179	939	924	615	1,754	2,066	37,281
Cabbage:												
1920	2,225	1,355	1,906	1,297	864	596	121	399	391	617	290	10,061
1921	3,030	1,780	1,962	1,105	1,049	669	75	400	386	505	202	11,223
1922	3,333	1,697	2,166	1,219	1,121	781	104	515	468	576	392	12,372
1923	3,981	1,685	2,233	1,274	1,018	729	81	503	390	536	401	12,831
1924	4,185	1,877	2,217	1,191	1,230	762	123	471	471	732	496	13,755
1925	3,729	1,872	2,243	1,101	1,216	700	175	484	473	572	544	13,109
1926	4,829	2,058	2,049	1,303	1,258	759	208	451	512	714	757	14,393

TABLE 224.—*Fruits and vegetables: Unloads of 10 commodities at 11 markets in car lots, 1920-1926*—Continued

Commodity and year	New York	Chicago	Philadelphia	Pittsburgh	St. Louis	Cincinnati	Minneapolis	Kansas City	Washington	Cleveland	Detroit	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Cantaloupes:												
1920	3, 788	2, 061	1, 065	1, 275	452	554	94	398	232	657	552	11, 126
1921	4, 781	2, 308	1, 258	1, 322	539	640	166	452	242	733	557	12, 998
1922	5, 535	2, 800	1, 542	1, 244	618	670	214	422	306	912	584	14, 853
1923	4, 521	2, 237	1, 226	1, 208	512	461	199	309	253	749	536	12, 206
1924	5, 742	2, 508	1, 416	1, 206	728	813	200	408	306	906	686	14, 976
1925	6, 908	2, 973	1, 434	1, 392	784	678	297	470	356	1, 086	969	17, 297
1926	7, 390	2, 960	1, 712	1, 230	711	652	229	390	357	1, 062	877	17, 570
Celery:												
1920	1, 276	979	753	529	217	207	89	220	103	144	154	4, 761
1921	1, 691	1, 479	951	665	354	316	126	304	197	243	264	6, 590
1922	1, 981	1, 689	814	677	350	331	152	321	214	217	321	7, 067
1923	2, 507	1, 818	850	830	386	370	214	382	241	340	466	8, 404
1924	2, 998	1, 631	1, 186	822	441	382	244	313	257	361	574	9, 209
1925	3, 307	2, 376	1, 342	798	544	396	295	341	313	356	706	10, 774
1926	3, 275	2, 121	1, 281	758	528	335	330	331	263	337	578	10, 137
Onions:												
1920	3, 723	1, 286	1, 554	1, 115	687	283	107	426	223	593	654	10, 601
1921	4, 429	1, 545	1, 482	922	559	314	91	345	196	498	558	10, 939
1922	4, 933	1, 673	1, 698	951	672	400	115	453	235	548	675	12, 353
1923	8, 338	1, 951	1, 790	941	664	394	95	454	247	662	732	16, 268
1924	8, [illegible]18	1, 955	2, 067	1, 003	788	480	142	537	292	745	795	16, 942
1925	8, 363	2, 042	2, 110	922	776	453	140	473	310	800	979	17, 368
1926	8, 009	2, 349	2, 018	898	877	421	207	388	307	781	1, 133	17, 388
Peaches:												
1920	2, 406	1, 264	837	849	347	481	64	158	190	477	619	7, 692
1921	4, 143	1, 326	1, 056	759	481	600	101	268	148	532	555	9, 969
1922	4, 017	2, 107	1, 016	1, 071	438	609	192	331	294	850	996	12, 521
1923	3, 496	1, 404	778	744	542	649	158	320	220	692	774	9, 777
1924	4, 593	1, 845	1, 093	841	777	762	233	358	226	1, 146	1, 123	13, 077
1925	4, 972	1, 998	991	914	631	626	217	278	273	849	1, 287	13, 036
1926	6, 032	2, 688	1, 295	1, 095	742	800	254	382	365	1, 162	1, 660	16, 536
Potatoes:												
1920	15, 078	11, 299	7, 130	5, 614	2, 512	2, 189	756	2, 145	874	3, 109	2, 695	53, 401
1921	17, 986	13, 077	7, 460	5, 309	3, 592	2, 857	845	2, 257	1, 153	3, 175	2, 203	60, 001
1922	20, 100	13, 912	8, 023	5, 609	4, 290	3, 447	717	2, 433	1, 023	3, 506	2, 948	66, 008
1923	21, 330	14, 436	8, 519	4, 906	3, 012	2, 942	735	2, 417	1, 646	3, 105	2, 818	65, 866
1924	22, 726	15, 664	8, 272	4, 083	2, 905	2, 098	520	2, 512	1, 784	3, 499	2, 465	67, 078
1925	23, 002	14, 768	8, 698	3, 897	3, 096	3, 188	707	3, 125	1, 859	2, 872	3, 381	69, 193
1926	20, 978	14, 856	8, 156	3, 609	3, 947	3, 243	1, 265	2, 941	1, 091	3, 669	4, 468	68, 823
Strawberries:												
1920	736	767	268	185	85	80	84	68	34	138	171	2, 616
1921	1, 101	1, 499	300	321	132	356	147	180	50	239	225	4, 550
1922	2, 193	1, 719	568	497	265	474	351	202	48	342	552	7, 271
1923	2, 507	1, 696	750	516	277	559	246	129	62	393	548	7, 683
1924	2, 537	1, 809	691	458	229	355	228	146	57	349	550	7, 409
1925	2, 005	942	455	285	130	340	184	145	71	260	413	5, 230
1926	1, 625	1, 526	363	360	171	282	230	124	61	279	478	5, 505
Sweet potatoes:												
1921	1, 592	1, 231	440	913	194	368	91	180	197	563	286	6, 055
1922	1, 625	1, 315	378	962	127	461	141	147	183	543	293	6, 175
1923	1, 255	1, 497	409	944	136	413	133	102	180	606	389	6, 064
1924	1, 286	1, 096	350	757	106	359	116	53	146	456	317	5, 042
1925	1, 678	1, 383	415	809	134	428	148	55	201	533	463	6, 247
1926	2, 113	1, 467	414	834	183	481	158	111	288	641	583	7, 273
Tomatoes:												
1920	1, 779	1, 183	810	765	220	218	49	214	149	152	174	5, 713
1921	2, 872	1, 588	1, 105	919	327	287	58	262	193	146	203	7, 960
1922	3, 974	1, 918	1, 382	1, 219	444	438	121	330	254	271	470	10, 821
1923	3, 981	1, 652	1, 436	1, 321	309	339	106	302	226	281	425	10, 328
1924	4, 623	2, 042	1, 507	1, 134	443	345	158	239	248	305	455	11, 499
1925	4, 931	2, 128	1, 478	1, 122	442	309	174	240	261	268	663	12, 016
1926	5, 170	2, 568	1, 130	1, 068	481	283	172	236	227	299	766	12, 400
Total (10 commodities):[1]												
1920	48, 295	27, 225	17, 521	14, 421	7, 359	6, 225	1, 828	5, 032	2, 847	7, 585	6, 272	144, 610
1921	59, 107	32, 467	19, 430	15, 130	9, 083	8, 217	2, 122	5, 650	3, 131	7, 818	6, 193	168, 348
1922	67, 448	35, 405	20, 126	15, 869	10, 436	8, 874	2, 819	5, 989	4, 079	9, 666	8, 633	189, 344
1923	73, 293	38, 740	21, 202	15, 684	9, 592	8, 515	2, 648	6, 425	4, 139	9, 175	8, 871	198, 284
1924	75, 963	37, 032	21, 795	14, 261	9, 607	8, 487	2, 772	5, 718	4, 343	10, 113	8, 695	198, 786
1925	76, 378	38, 256	21, 676	13, 810	10, 308	8, 413	3, 210	6, 982	4, 674	9, 166	11, 531	204, 399
1926	76, 242	40, 428	21, 040	13, 783	10, 990	8, 495	3, 998	6, 278	4, 686	10, 698	13, 386	210, 024

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Unloads as shown in car lots include those by boat reduced to car-lot basis.

[1] The totals include l. c. l. unloads for New York, converted to car-lot equivalents: 6,756 cars in 1920; 5,498 in 1921; 6,393 in 1922; 5,839 in 1923; 4,775 in 1924; 3,722 in 1925; 2,715 in 1926.

BEANS

TABLE 225.—*Beans, dry: Acreage, production, and December 1 price, United States, 1914–1926*

Year	Thousands of acres	Average yield in bushels per acre	Production, thousands of bushels	Price per bushel received by producers Dec. 1.	Year	Thousands of acres	Average yield in bushels per acre	Production, thousands of bushels	Price per bushel received by producers Dec. 1.
1914	875	13.2	11,585	$2.26	1921	782	11.7	9,185	2.67
1915	928	11.1	10,321	2.59	1922	1,086	11.9	12,877	3.74
1916	1,107	9.7	10,715	5.10					
1917	1,821	8.8	16,045	6.50	1923	1,344	12.1	16,308	3.67
1918	1,744	10.0	17,397	5.28	1924	1,576	9.6	15,164	3.74
					1925	1,606	12.4	19,928	3.28
1919	1,065	12.6	13,399	4.26	1926 [1]	1,659	10.3	17,138	2.93
1920	852	10.8	9,225	2.96					

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 226.—*Beans, dry: Acreage, production, and December 1 price, by States, 1924–1926*

State	Acreage			Average yield per acre			Production			Price per bushel received by producers Dec. 1		
	1924	1925	1926 [1]	1924	1925	1926	1924	1925	1926 [1]	1924 [2]	1925	1926
	1,000 acres	*1,000 acres*	*1,000 acres*	*Bus.*	*Bus.*	*Bus.*	*1,000 bus.*	*1,000 bus.*	*1,000 bus.*	*Dolls.*	*Dolls.*	*Dolls.*
Maine	4	5	5	17.0	14.0	17.0	68	70	85	4.90	5.00	5.50
Vermont	4	5	5	15.0	11.0	10.0	60	55	50	4.00	4.50	5.00
New York	158	135	97	13.0	10.8	11.8	2,054	1,458	1,145	3.80	4.00	3.70
Michigan	625	639	552	10.5	13.5	12.0	6,562	8,626	6,624	3.15	2.95	2.80
Wisconsin	10	12	9	8.5	11.0	7.5	85	132	68	3.40	3.20	3.00
Minnesota	10	8	7	10.0	13.0	12.0	100	104	84	3.70	3.40	3.10
Nebraska	2	2	4	10.0	9.0	8.3	20	18	33	4.00	3.60	3.70
Montana	25	37	41	12.0	12.5	10.0	300	462	410	3.30	3.05	2.80
Idaho	65	72	54	19.5	22.0	18.5	1,268	1,584	999	4.10	2.70	2.60
Wyoming	8	12	16	12.0	15.0	12.5	96	180	200	3.55	3.00	3.00
Colorado	280	320	362	3.4	7.0	3.0	952	2,240	1,086	3.10	2.40	2.80
New Mexico	174	114	195	5.0	3.5	4.3	870	399	838	3.80	3.30	2.60
Arizona	5	5	7	6.0	8.0	8.0	30	40	56	4.50	4.20	3.50
California	206	240	305	13.1	19.0	17.9	2,699	4,560	5,460	5.20	4.10	3.00
United States	1,576	1,606	1,659	9.6	12.4	10.3	15,164	19,928	17,138	3.74	3.28	2.93

Division of Crop and Livestock Estimates.

[1] Preliminary. [2] November 15 price.

TABLE 227.—*Beans, dry: Carlot shipments by State of origin, 1920–1926*

State	1920	1921	1922	1923	1924	1925	1926 [1]
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
New York	656	1,327	1,599	1,775	1,917	1,527	909
Michigan	3,187	5,990	5,087	5,998	8,701	8,748	8,972
Idaho	185	146	395	604	1,095	1,788	1,521
Colorado	231	542	483	1,091	1,454	2,426	2,113
New Mexico	608	974	289	85	275	307	337
California	3,956	3,854	3,822	3,284	2,230	2,278	2,673
Other States	158	122	86	153	231	466	475
Total	8,981	12,955	11,761	12,990	15,903	17,540	17,090

Division of Statistical and Historical Research. Compiled from reports of Division of Fruits and Vegetables. Shipments as shown in carlots include those by boat reduced to carlot basis.

[1] Preliminary.

TABLE 228.—*Beans, dried: Wholesale price per 100 pounds, 1920–1926*

BOSTON, PEA [1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1920	7.51	7.62	7.46	7.29	7.62	7.62	7.59	6.99	6.88	6.36	5.67	5.14	6.98
1921	4.98	4.68	4.64	4.52	4.44	4.64	4.58	4.96	5.41	5.24	5.34	5.08	4.88
1922	5.14	5.76	6.88	7.34	8.14	9.69	9.75	9.03	7.06	6.97	7.68	7.81	7.60
1923	7.62	7.71	7.66	7.60	7.27	7.35	7.18	6.89	7.40	7.75	7.79	7.12	7.44
1924	7.06	7.40	7.30	7.28	7.12	7.12	7.16	7.68	8.04	8.18	8.10	8.00	7.54
1925	6.94	7.20	6.91	6.60	6.31	6.34	6.17	5.89	5.50	5.49	5.86	5.90	6.26
1926	5.67	5.49	5.32	5.06	5.01	5.48	5.65	5.48	5.28	5.98	6.32	6.11	5.57

CHICAGO, PEA [2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1920	7.76	7.40	7.04	7.16	7.58	8.07	7.18	6.75	6.75	6.13	4.82	4.52	6.76
1921	4.38	4.55	4.56	4.06	4.01	4.26	4.02	4.84	5.34	5.22	5.17	4.94	4.61
1922	4.93	5.76	7.01	7.69	7.82	9.95	9.78	9.15	6.14	5.75	7.04	8.53	7.46
1923	8.25	8.43	8.18	7.83	7.79	7.76	6.60	5.08	5.99	6.35	6.10	5.54	7.04
1924	5.30	5.36	5.23	5.17	4.93	4.96	5.00	5.48	6.31	6.07	5.88	5.84	5.46
1925	6.64	6.37	6.39	6.25	6.14	6.02	6.10	6.08	6.69	6.11	5.70	5.45	6.16
1926	5.42	5.05	4.56	4.47	4.40	4.69	4.67	4.65	4.68	5.56	5.79	5.44	4.95

SAN FRANCISCO, SMALL WHITE [3]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1920	6.64	6.53	6.40	5.94	6.20	6.40	6.29	5.72	5.58	4.56	4.38	4.19	5.72
1921	3.82	3.86	3.63	3.49	3.39	3.42	3.68	4.22	4.55	4.68	4.79	4.79	4.03
1922	4.89	5.25	6.08	6.50	6.58	7.59	7.39	6.33	5.40	5.59	6.11	6.48	6.18
1923	7.48	7.23	7.27	7.22	6.76	6.81	6.42	6.05	6.75	6.05	6.09	5.92	6.67
1924	5.92	6.18	6.03	6.02	6.04	6.29	7.04	7.29	7.86	8.00	7.89	7.18	6.81
1925	7.22	7.71	7.54	7.49	7.38	7.31	7.42	7.42	7.32	6.20	5.71	5.98	7.06
1926	6.26	6.25	5.97	5.87	5.62	5.57	5.83	5.95	5.66	5.89	5.94	5.81	5.88

LIMA, CALIFORNIA, AT NEW YORK [4]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1920	14.45	14.31	12.13	11.84	11.95	12.57	12.84	12.46	11.62	8.47	8.18	7.97	11.57
1921	7.62	7.67	7.10	6.56	6.77	6.90	6.55	6.69	6.79	6.65	7.05	7.32	6.97
1922	7.40	8.88	9.66	9.68	10.00	10.18	10.22	9.84	8.91	8.49	8.65	8.91	9.24
1923	9.89	9.79	9.59	9.41	8.59	8.80	8.25	8.55	9.40	9.84	10.41	10.09	9.34
1924	10.81	11.30	12.40	12.38	12.48	12.59	12.62	13.04	13.62	14.42	14.12	13.89	12.83
1925	14.41	15.00	14.79	14.85	14.94	15.27	15.79	16.27	15.92	14.11	13.24	11.88	14.71
1926	11.83	12.06	11.20	10.13	9.15	8.88	8.76	8.55	8.94	8.44	7.68	7.01	9.89

LIMA, MADAGASCAR, AT NEW YORK [4]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1920	10.25	10.16	9.32	8.44	7.83	7.58	7.46	6.77	6.08	4.97	4.50	4.38	7.31
1921	3.92	3.88	3.83	3.63	3.03	3.00	3.00	3.00	3.00	3.00	([5])	([5])	-------
1922	([5])	([5])	([5])	6.88	6.88	6.88	7.10	7.25	7.20	7.12	7.12	([5])	-------
1923	([5])	6.25	6.51	6.69	6.24	6.47	6.27	6.16	6.95	7.44	7.92	7.72	-------
1924	7.84	9.02	9.55	10.32	10.33	10.02	9.84	10.50	11.24	12.03	12.36	12.38	10.45
1925	12.35	12.60	12.75	12.51	12.38	12.38	12.45	12.59	12.30	11.93	11.14	10.03	12.12
1926	9.64	9.62	9.34	8.71	7.98	7.88	7.73	7.58	7.38	7.12	7.12	([5])	-------

Division of Statistical and Historical Research.

[1] Compiled from the Boston Chamber of Commerce, weekly, 1920–1925; from the Boston Produce Market Report, weekly, 1926.
[2] Compiled from the Chicago Daily Trade Bulletin.
[3] Compiled from the San Francisco Commercial News, daily.
[4] Compiled from Producers Price Current, daily.
[5] No quotations.

TABLE 229.—*Soy beans: Estimated price per bushel, received by producers, United States, 1913–1926*

Year beginning October	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Weighted average
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
1913	1.96	1.57	1.72	1.96	1.80	1.76
1914	2.08	2.15	2.24	2.35	2.26	2.18
1915	1.88	2.08	2.23	2.31	2.29	2.11
1916	2.13	2.13	2.18	2.20	2.45	2.16
1917	2.73	2.86	3.33	3.47	3.82	3.05
1918	3.36	3.20	3.29	3.00	3.00	3.23
1919	3.34	3.35	3.44	3.76	4.05	3.45
1920	3.41	3.00	2.28	2.18	2.17	2.80
1921	2.20	2.22	2.08	2.11	2.16	2.17
1922	1.89	2.06	1.97	2.07	2.13	2.00
1923	2.09	2.11	2.11	2.23	2.26	2.12
1924	2.23	2.16	2.36	2.59	2.64	2.29
1925	2.27	2.18	2.17	2.38	2.33	2.23
1926	1.97	1.85	1.83			

Division of Crop and Livestock Estimates.

TABLE 230.—*Soy-bean seed: Average wholesale selling price per 100 pounds at Baltimore and St. Louis, 1920–1926*

Year	Baltimore						St. Louis					
	Jan.	Feb.	Mar.	Apr.	May	Av.	Jan.	Feb.	Mar.	Apr.	May	Av.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average 1921-1925		3.98	4.05	4.10	4.14		4.40	4.57	4.63	4.36	4.62	4.52
1920	6.80	8.00	8.00	8.00	8.60	7.88	8.10	10.00	9.90	9.65	10.00	9.53
1921	3.15	3.50	3.50	3.75	4.70	3.72	4.80	5.40	5.75	5.00	5.40	5.17
1922	3.20	3.50	3.50	3.50	3.30	3.40	4.00	4.00	4.20	3.85	4.55	4.12
1923		4.00	4.00	3.80	3.75		5.00	4.75	4.50	4.50	4.95	4.74
1924	3.50	4.00	4.00	4.50	5.00	4.20	4.70	4.70	4.70	4.70	4.60	4.68
1925	5.10	4.90	5.25	4.95	3.95	4.83	4.00	4.00	4.00	3.75	3.60	3.87
1926	3.35	3.42	3.50	3.56	4.62	3.69	3.55	3.61	3.86	4.25	4.85	4.03

Division of Statistical and Historical Research. Compiled from weekly reports of the Division of Hay, Feed, and Seed. These prices are the average wholesale selling prices for high quality seed, as reported to the Division of Hay, Feed, and Seed, weekly, by seedsmen in these markets.

TABLE 231.—*Cowpeas: Estimated price per bushel, received by producers, United States, 1915–1926*

Year beginning August	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Weighted average
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1915	174.4	155.4	156.0	151.4	151.8	156.3	157.2	153.7	150.2	148.8	140.0	135.1	151.9
1916	141.3	142.4	148.1	161.6	177.0	192.2	210.0	231.8	253.4	293.1	309.1	303.2	189.7
1917	265.4	217.0	219.5	227.1	237.5	262.2	292.5	301.5	292.8	288.3	257.4	248.4	236.2
1918	241.3	226.2	233.9	231.4	237.6	238.9	252.1	248.8	267.6	292.8	342.9	342.8	254.3
1919	310.3	269.4	260.9	270.7	280.6	312.9	372.4	394.0	421.4	484.4	483.7	470.8	319.4
1920	422.7	368.8	273.7	243.4	229.0	197.2	204.2	204.7	215.5	242.7	265.1	287.2	273.8
1921	240.9	199.7	201.2	184.8	176.1	171.9	179.7	185.8	184.8	189.6	184.0	170.0	190.7
1922	166.5	157.4	153.6	168.6	167.4	187.0	197.6	198.2	208.0	208.5	217.2	221.3	172.8
1923	208.1	187.2	195.4	194.5	200.9	211.5	221.1	231.9	246.3	253.4	282.4	285.6	213.6
1924	255.6	240.7	231.5	234.4	256.2	282.0	316.1	342.9	366.7	369.5	384.0	306.9	272.7
1925	323.7	311.6	293.3	297.5	287.2	302.7	320.9	337.1	349.9	342.6	346.8	347.0	309.1
1926	322.3	279.2	234.2	205.2	194.7								

Division of Crop and Livestock Estimates.

TABLE 232.—*Cowpea seed: Average wholesale selling price per 100 pounds at Baltimore and St. Louis, 1920–1926*

Year	Baltimore						St. Louis					
	Jan.	Feb.	Mar.	Apr.	May	Av.	Jan.	Feb.	Mar.	Apr.	May	Av.
	Dolls.	*Dolls.*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average, 1921–1925	4.79	4.95	4.90	5.13	5.35	5.02	4.66	4.79	4.93	5.08	5.58	5.01
1920	7.20	9.00	9.00	9.00	9.60	8.76	10.50	12.75	11.25	10.65	11.00	11.23
1921	4.50	4.50	4.50	5.30	6.20	5.00	4.00	4.20	4.45	5.05	6.50	4.84
1922	3.70	4.00	4.00	4.00	4.00	3.94	3.20	3.15	3.65	3.75	3.75	3.50
1923	4.25	4.25	4.25	4.25	4.25	4.25	5.00	4.95	4.75	4.75	4.95	4.88
1924	5.00	5.50	5.25	5.60	5.75	5.42	4.60	4.95	5.00	5.05	5.90	5.10
1925	6.50	6.50	6.50	6.50	6.55	6.51	6.50	6.70	6.80	6.80	6.80	6.72
1926	------	7.08	7.10	7.05	7.02	------	7.50	7.38	7.0[illegible]	6.81	6.75	7.09

Division of Statistical and Historical Research. Compiled from weekly reports of the Division of Hay, Feed, and Seed. These prices are the average wholesale selling prices for high quality seed, as reported to the Division of Hay, Feed, and Seed, weekly, by seedsmen in these markets.

TABLE 233.—*Broomcorn: Acreage, production, and November 15 price, United States, 1915–1926*

Year	Acreage	Average yield per acre	Production	Price per ton received by producers Nov. 15	Year	Acreage	Average yield per acre	Production	Price per ton received by producers Nov. 15
	Acres	*Pounds*	*Short tons*	*Dollars*		*Acres*	*Pounds*	*Short tons*	*Dollars*
1915	230,100	454.1	52,242	91.07	1921	222,000	344.2	38,200	72.20
1916	235,200	329.3	38,726	172.75	1922	275,000	271.3	37,300	219.46
1917	345,000	332.8	57,400	292.75	1923	536,000	302.8	81,153	160.06
1918	366,000	340.4	62,300	233.87	1924	451,000	346.8	78,200	95.63
1919	352,000	303.4	53,400	154.57	1925	223,000	264.6	29,500	[1] 143.02
1920	275,500	265.0	36,500	126.16	1926 [2]	298,000	345.6	51,500	[3] 78.49

Division of Crop and Livestock Estimates.

[1] Weighted average of the season to December 1. [2] Preliminary. [3] December 1 price.

TABLE 234.—*Broomcorn: Acreage, production, and December 1 price, by States, 1924–1926*

State	Acreage			Average yield per acre			Production			Price per ton received by producers Dec. 1		
	1924	1925	1926 [1]	1924	1925	1926	1924	1925	1926 [1]	1924 [2]	1925 [3]	1926
	1,000 acres	*1,000 acres*	*1,000 acres*	*Lbs.*	*Lbs.*	*Lbs.*	*Tons*	*Tons*	*Tons*	*Dolls*	*Dolls.*	*Dolls.*
Illinois	49	30	37	450	560	420	11,000	8,400	7,800	150	175	115
Missouri	4	4	3	300	322	250	600	600	400	100	200	87
Kansas	45	22	31	295	286	327	6,600	3,100	5,100	95	120	85
Tennessee	2	------	------	350	------	------	400	------	------	100	------	------
Oklahoma	246	108	151	369	205	375	45,400	11,100	28,300	85	136	70
Texas	23	11	15	418	318	410	4,800	1,700	3,100	100	140	75
Colorado	34	24	32	170	160	150	2,900	1,900	2,400	60	140	83
New Mexico	48	24	29	270	225	300	6,500	2,700	4,400	85	90	60
United States	451	223	293	346.8	264.6	345:6	78,200	29,500	51,500	95.63	143.02	78.49

Division of Crop and Livestock Estimates.

[1] Preliminary. [2] Nov. 15 price. [3] Weighted average of the season to Dec. 1.

COTTON

TABLE 235.—*Cotton: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage picked	Average yield per acre	Production	Price per pound received by producers Dec. 1	Farm value, Dec. 1	Value per acre [1]	New York closing prices per pound, on middling upland: December, Low	December, High	Following May, Low	Following May, High	Domestic exports, excluding linters, fiscal year beginning July [2] [3]	Imports, fiscal year beginning July [2]
	1,000 acres	*Lbs.*	*1,000 bales*	*Cents*	*1,000 dollars*	*Dollars*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Bales* [4]	*Bales* [5]
Average:												
1909–1913	34, 152	182. 5	*13, 033*	12. 5	777, 148	22. 76	12. 78	13. 55	13. 17	14. 14	8, 839, 604	232, 128
1914–1920	34, 646	171. 6	*12, 426*	20. 4	1, 214, 420	35. 05	20. 75	23. 24	20. 78	23. 73	6, 100, 463	371, 559
1921–1925	37, 616	146. 4	*11, 518*	22. 2	1, 276, 329	33. 93	23. 74	25. 98	23. 04	25. 46	6, 785, 883	367, 384
1909	30, 938	154. 3	*10, 005*	13. 9	697, 681	22. 55	14. 65	16. 15	14. 50	16. 05	6, 413, 416	179, 995
1910	32, 403	170. 7	*11, 609*	14. 1	820, 407	25. 32	14. 80	15. 25	15. 35	16. 15	8, 007, 882	238, 009
1911	36, 045	207. 7	*15, 693*	8. 8	687, 888	19. 08	9. 20	9. 65	11. 30	11. 90	11, 070, 251	229, 665
1912	34, 283	190. 9	*13, 703*	11. 9	817, 055	23. 83	12. 75	13. 20	11. 80	12. 10	9, 124, 591	254, 921
1913	37, 089	182. 0	*14, 156*	12. 2	862, 708	23. 26	12. 50	13. 50	12. 90	14. 50	9, 521, 881	258, 048
1914	36, 832	209. 2	*16, 135*	6. 8	549, 036	14. 91	7. 25	7. 80	9. 50	10. 40	8, 581, 467	387, 457
1915	31, 412	170. 3	*11, 192*	11. 3	631, 460	20. 10	11. 95	12. 75	12. 30	13. 35	5, 917, 084	487, 032
1916	34, 985	156. 6	*11, 450*	19. 6	1, 122, 295	32. 08	16. 20	20. 30	19. 60	22. 10	5, 702, 213	307, 600
1917	33, 841	159. 7	*11, 302*	27. 7	1, 566, 198	46. 28	29. 85	31. 85	25. 70	30. 10	4, 454, 898	216, 162
1918	36, 008	159. 6	*12, 041*	27. 6	1, 663, 633	46. 20	27. 50	33. 00	25. 90	34. 00	5, 441, 966	216, 720
1919	33, 566	161. 5	*11, 421*	35. 6	2, 034, 658	60. 62	38. 00	40. 25	40. 00	43. 00	7, 035, 507	722, 414
1920	35, 878	178. 4	*13, 440*	13. 9	933, 658	26. 02	14. 50	16. 70	12. 45	13. 15	5, 570, 106	263, 470
1921	30, 509	124. 5	*7, 954*	16. 2	643, 933	21. 11	17. 50	19. 45	18. 95	21. 80	6, 591, 839	374, 722
1922	33, 036	141. 2	*9, 755*	23. 8	1, 160, 968	35. 14	24. 55	26. 80	25. 30	28. 90	5, 205, 518	403, 981
1923	37, 123	130. 6	*10, 140*	31. 0	1, 571, 829	42. 34	34. 35	37. 65	30. 05	32. 85	5, 783, 698	305, 489
1924	41, 360	157. 4	*13, 628*	22. 6	1, 540, 884	37. 26	23. 15	24. 90	22. 20	24. 40	8, 238, 817	324, 461
1925	46, 053	167. 2	*16, 104*	18. 2	1, 464, 032	31. 79	19. 15	21. 10	18. 70	19. 35	8, 109, 544	338, 230
1926 [6]	47, 653	187. 0	18, 618	10. 9	1, 016, 346	21. 33	12. 15	13. 10	-----	-----	-----------	--------

Division of Crop and Livestock Estimates; figures in italics are census returns; acreage revised on census basis.

[1] Based on farm price December 1.
[2] Compiled from Commerce and Navigation of United States, 1909–1918, and the June issue of Monthly Summaries of Foreign Commerce, 1919–1926.
[3] Cotton, including linters prior to 1914.
[4] Bales of 500 pounds gross weight.
[5] Bales of 478 pounds net weight.
[6] Preliminary.

TABLE 236.—*Cotton: Acreage harvested, by States, 1916–*

[Thousand acres—i. e., 000 omitted]

State	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926 [1]
Missouri	133	153	148	125	136	103	198	355	493	520	488
Virginia	42	50	44	42	42	34	55	74	102	100	101
North Carolina	1, 451	1, 515	1, 600	1, 490	1, 587	1, 403	1, 625	1, 679	2, 005	2, 017	2, 023
South Carolina	2, 780	2, 837	3, 001	2, 835	2, 964	2, 571	1, 912	1, 965	2, 404	2, 654	2, 732
Georgia	5, 277	5, 195	5, 341	5, 220	4, 900	4, 172	3, 418	3, 421	3, 046	3, 589	4, 029
Florida	191	183	167	103	100	65	118	147	80	101	109
Tennessee	887	882	902	758	840	634	985	1, 172	996	1, 173	1, 178
Alabama	3, 225	1, 977	2, 570	2, 791	2, 858	2, 235	2, 771	3, 079	3, 055	3, 504	3, 713
Mississippi	3, 110	2, 788	3, 138	2, 848	2, 950	2, 628	3, 014	3, 170	2, 981	3, 466	3, 768
Arkansas	2, 600	2, 740	2, 991	2, 725	2, 980	2, 382	2, 799	3, 026	3, 094	3, 738	3, 782
Louisiana	1, 250	1, 454	1, 683	1, 527	1, 470	1, 168	1, 140	1, 405	1, 616	1, 874	1, 960
Oklahoma	2, 562	2, 783	2, 998	2, 424	2, 749	2, 206	2, 915	3, 197	3, 861	5, 214	4, 912
Texas	11, 400	11, 092	11, 233	10, 476	11, 898	10, 745	11, 874	14, 150	17, 175	17, 608	18, 363
New Mexico	------	------	------	------	------	------	------	60	101	107	120
Arizona	------	41	95	107	230	90	101	127	180	162	167
California	52	136	85	85	150	55	67	83	130	169	160
All other	25	15	12	10	24	18	44	13	41	57	48
United States	34, 985	33, 841	36, 008	33, 566	35, 878	30, 509	33, 036	37, 123	41, 360	46, 053	47, 653
Lower California (old Mexico)	------	-----	88	100	125	85	135	150	137	150	130

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 237.—*Cotton: Yield per acre, by States, 1921–1926*

State	Average 1921–1925	1921	1922	1923	1924	1925	1926	State	Average 1921–1925	1921	1922	1923	1924	1925	1926
	Lbs.	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*		*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Mo.	203	325	360	171	185	275	250	La.	152	114	144	125	145	232	200
Va.	243	230	230	325	180	250	260	Okla.	129	104	103	98	187	155	190
N. C.	252	264	250	290	196	261	295	Tex.	125	98	130	147	138	113	154
S. C.	154	140	123	187	160	160	180	N. Mex.	-----	-----	-----	230	266	298	287
Ga.	117	90	100	82	157	155	175	Ariz.	278	242	222	292	285	350	330
Fla.	106	80	102	40	130	180	145	Calif.	271	258	188	285	284	340	382
Tenn.	178	228	190	92	170	210	198								
Ala.	139	124	142	91	154	185	192	U. S.	145.5	124.5	141.2	130.6	157.4	167.2	187.0
Miss.	169	148	157	91	176	275	245								
Ark.	161	160	173	98	169	205	205								

Division of Crop and Livestock Estimates.

TABLE 238.—*Cotton: Production of lint (excluding linters) in 500-pound gross-weight bales, by States, year beginning August 1, 1916–1926*

[Thousand bales—i. e., 000 omitted]

State	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926 [1]
Missouri	63	61	62	64	79	70	[2] 149	[2] 127	[2] 193	[2] 299	255
Virginia	27	19	25	23	21	16	27	51	39	53	55
North Carolina	655	618	898	830	925	776	852	1,020	825	1,102	1,250
South Carolina	982	1,237	1,570	1,426	1,623	755	492	770	807	889	1,030
Georgia	1,821	1,884	2,122	1,660	1,415	787	715	588	[2] 1,002	1,164	1,475
Florida	41	38	29	16	18	11	25	12	[2] 22	38	33
Tennessee	382	241	330	310	.325	302	391	[2] 226	[2] 354	[2] 515	475
Alabama	533	518	801	713	663	580	823	587	[2] 985	1,357	1,490
Mississippi	812	906	1,226	961	895	813	989	604	1,099	1,991	1,930
Arkansas	1,134	974	987	884	1,214	797	[2] 1,012	[2] 622	[2] 1,094	[2] 1,600	1,620
Louisiana	443	639	588	208	388	279	343	368	493	910	820
Oklahoma	824	959	577	1,016	1,336	481	627	656	1,511	1,691	1,950
Texas	3,726	3,125	2,697	3,099	4,345	2,198	3,222	[2] 4,340	[2] 4,949	[2] 4,163	5,900
New Mexico	------	------	------	------	------	6	12	[2] 30	[2] 57	[2] 66	72
Arizona	------	22	56	60	103	45	47	78	108	119	115
California	44	58	67	56	75	34	21	54	77	122	128
All other	14	6	6	5	13	3	7	[2] 8	[2] 14	[2] 26	20
United States	11,450	11,302	12,041	11,421	13,440	7,954	9,755	10,140	13,628	16,104	18,618

Division of Crop and Livestock Estimates. Compiled from reports of the Bureau of the Census.

[1] Preliminary estimate of the Department of Agriculture.

[2] Slight differences from census figures on ginnings due to ginnings in one State of cotton grown in another.

TABLE 239.—*Cotton (linters): Production, United States, 1909–1925*

Year beginning August	Production, in 500-lb. gross-weight bales	Year beginning August	Production, in 500-lb. gross-weight bales
Average:		1916	1,330,714
1909–1913	502,711	1917	1,125,719
1914–1920	888,896	1918	929,516
1921–1925	737,277	1919	607,969
		1920	440,313
1909	310,433		
1910	397,072	1921	397,752
1911	557,575	1922	607,779
1912	609,594	1923	668,600
1913	638,881	1924	897,375
		1925	1,114,877
1914	856,900		
1915	931,141		

Division of Crop and Livestock Estimates. Compiled from reports of the Bureau of the Census.

TABLE 240.—*Fertilizer, commercial: Sold in cotton States, based on sale of fertilizer tags, 1920–1926*

State	Year ending	1920	1921	1922	1923	1924	1925 [1]	1926 [1]
		Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Virginia	Dec. 31	405,227	369,490	449,942	[2] 302,211	[2] 343,793	349,977	330,305
North Carolina	June 30	1,222,103	831,684	1,036,430	1,190,583	1,189,315	1,217,467	1,213,176
South Carolina	June 24	1,253,890	609,484	505,768	678,795	879,093	806,877	840,955
Georgia [3]	June 28	1,039,048	556,573	565,084	677,040	690,075	789,822	775,150
Florida	May 31	272,316	289,857	329,668	379,000	386,521	361,849	355,373
Alabama	Sept. 30	391,170	179,547	293,147	434,374	472,412	579,127	600,555
Mississippi	do	139,100	50,809	130,648	215,851	213,516	257,113	280,010
Louisiana	Aug. 31	95,863	38,760	66,470	107,368	129,288	108,989	114,922
Texas	May 31	56,700	19,204	33,420	75,599	120,000	102,653	135,009
Arkansas	Sept. 30	39,036	14,550	40,325	74,599	84,995	122,742	135,743
Tennessee	May 31	112,102	84,044	96,992	112,656	117,137	135,270	155,248
Missouri		77,888	8,022	7,900				
Total		5,194,503	3,112,084	3,529,794	4,248,079	4,020,145	4,886,386	4,936,437

Division of Statistical and Historical Research. Compiled from reports of the Division of Crop and Livestock Estimates. Figures for earlier years appear in previous issues of the Yearbook

[1] Sales as reported to the following dates: For 1925, June 30 for Virginia, North Carolina, and Georgia; June 25 for South Carolina; May 31 for Florida, Texas, and Tennessee; Sept. 30 for Alabama, Mississippi, and Arkansas; and Aug. 31 for Louisiana. For 1926, June 30 for Virginia, Georgia, Alabama, Mississippi, and Arkansas; June 25 for South Carolina; June 28 for North Carolina and Louisiana; Apr. 30 for Florida; May 1 for Texas; and June 1 for Tennessee.

[2] Year ending June 30.

[3] In Georgia, tags bought in one year can be held by dealers and used in the following year.

TABLE 241.—*Fertilizer used on cotton. 1924–1926*

State	Acreage in cotton						Fertilizers used						Value								
	June 25			Fertilized			Average per acre			Total			Average price per ton			Total			Average per acre		
	1924	1925	1926	1924	1925	1926	1924	1925	1926	1924	1925	1926	1924	1925	1926	1924	1925	1926	1924	1925	1926
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Lbs.*	*Lbs.*	*Lbs.*	*Short tons*	*Short tons*	*Short tons*	*Dolls.*	*Dolls.*	*Dolls.*	*1,000 dolls.*	*1,000 dolls.*	*1,000 dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Virginia	107	101	93	105	97	87	440	390	390	23,100	18,915	16,965	27.40	31.50	30.50	633	596	517	6.03	6.14	5.94
North Carolina	2,099	2,037	2,057	2,078	1,996	1,995	450	450	440	467,550	449,100	438,900	26.70	30.50	31.10	12,484	13,698	13,211	6.01	6.86	6.62
South Carolina	2,491	2,708	2,789	2,366	2,546	2,622	345	350	325	408,135	445,550	426,075	25.40	29.50	29.20	10,367	13,144	12,441	4.38	5.16	4.74
Georgia	3,099	3,662	4,028	2,944	3,479	3,867	270	265	257	397,440	460,968	496,910	27.00	31.00	31.10	10,731	14,567	15,454	3.65	4.19	4.00
Florida	82	103	113	75	93	103	200	232	245	7,500	10,788	12,618	28.00	31.00	30.50	210	334	385	2.80	3.59	3.74
Alabama	3,114	3,539	3,787	2,740	3,185	3,446	238	245	255	326,060	390,162	439,365	20.20	32.70	33.20	9,521	12,758	14,587	3.47	4.01	4.23
Mississippi	3,057	3,501	3,781	1,406	1,750	1,815	200	213	222	140,600	186,375	201,465	35.00	37.00	37.50	4,921	6,896	7,555	3.50	3.94	4.16
Louisiana	1,666	1,903	1,979	833	799	831	175	171	190	72,888	68,314	78,945	38.50	41.00	38.60	2,806	2,801	3,047	3.37	3.51	3.67
Texas	17,706	19,139	18,948	1,239	957	1,326	175	175	185	108,412	83,738	122,635	35.20	37.00	37.20	3,816	3,098	4,563	3.08	3.24	3.44
Arkansas [1]	3,173	3,814	3,907	1,111	1,335	1,507	177	185	185	98,324	123,488	139,398	35.60	37.00	38.40	3,500	4,569	5,353	3.15	3.42	3.55
Tennessee	1,016	1,191	1,191	457	596	596	205	219	220	46,842	65,262	65,560	27.50	32.50	36.20	1,288	2,121	2,373	2.82	3.56	3.98
Missouri	524	512	488	21	27	24	170	120	125	1,785	1,620	1,500	34.00	35.00	35.00	61	57	52	2.90	2.11	2.17
Oklahoma	4,022	5,320	5,160	201	27	36	150	160	175	15,075	2,160	3,150	29.50	30.00	31.00	445	65	98	2.21	2.41	2.72
California	130	171	167																		
Arizona	183	162	168																		
New Mexico	126	138	132	6	1	1	150	180	190	450	90	95	33.00	30.00	35.00	15	3	3	2.50	3.00	3.00
All other [2]	46	59	50																		
Total or average	42,641	48,090	48,898	15,582	16,888	18,256	272	273	268	2,114,161	2,306,530	2,443,601	28.76	32.39	32.53	60,798	74,707	79,639	3.90	4.42	4.36

Division of Statistical and Historical Research. Compiled from reports of the Division of Crop and Livestock Estimates. Figures for earlier years appear in previous issues of the Yearbook.

[1] Cottonseed meal and nitrate of soda are not included in the report for this State.

[2] Includes Illinois, Kansas, and Kentucky.

TABLE 242.—*Cotton ginned to specified dates and total, by seasons, United States, 1909–1926*

Season beginning August	Cotton ginned to—												Total ginned [1]
	Aug. 1	Aug. 16	Sept. 1	Sept. 25	Oct. 1	Oct. 18	Nov. 1	Nov. 14	Dec. 1	Dec. 13	Jan. 1	Jan. 16	
	Bales	*Bales*	*Bales*	*Bales*	*Bales*	*Bales*	*Bales*	*Bales*	*Bales*	*Bales*	*Bales*	*Bales*	*Bales*
Average:													
1909–1913			608, 507	2, 962, 149		6, 512, 188	8, 406, 865	9, 790, 529	11, 155, 272	11, 838, 144	12, 260, 794	12, 445, 501	12, 933, 098
1914–1920			563, 135	2, 963, 808		6, 242, 000	7, 800, 816	9, 121, 574	10, 199, 948	10, 828, 997	11, 270, 243	11, 535, 257	12, 298, 450
1921–1925			1, 053, 706	3, 393, 240		7, 204, 001	8, 652, 890	9, 587, 253	10, 462, 222	10, 890, 533		11, 262, 290	11, 527, 939
1909			388, 242	2, 568, 150		5, 530, 967	7, 017, 849	8, 112, 199	8, 876, 886	9, 358, 085	9, 647, 327	9, 787, 592	10, 072, 731
1910			353, 011	2, 312, 074		5, 423, 628	7, 345, 953	8, 780, 433	10, 139, 712	10, 695, 443	11, 084, 515	11, 253, 147	11, 568, 334
1911			771, 297	3, 676, 594		7, 758, 621	9, 970, 905	11, 313, 236	12, 816, 807	13, 770, 727	14, 317, 002	14, 515, 799	15, 553, 073
1912			730, 884	3, 007, 271		6, 874, 206	8, 869, 222	10, 296, 646	11, 854, 541	12, 439, 036	12, 907, 405	13, 088, 930	13, 488, 539
1913			799, 099	3, 246, 655		6, 973, 518	8, 830, 396	10, 444, 529	12, 088, 412	12, 927, 428	13, 347, 721	13, 582, 036	13, 982, 811
1914			480, 317	3, 393, 752		7, 619, 747	9, 826, 912	11, 068, 240	13, 073, 386	13, 972, 229	14, 443, 146	14, 915, 850	15, 905, 840
1915			463, 883	2, 903, 829		5, 708, 730	7, 378, 886	8, 771, 275	9, 703, 612	10, 306, 309	10, 636, 778	10, 751, 990	11, 068, 173
1916			850, 668	4, 081, 989		7, 303, 183	8, 623, 893	9, 615, 003	10, 352, 031	10, 838, 799	11, 039, 491	11, 137, 712	11, 363, 915
1917			614, 737	2, 511, 658		5, 573, 606	7, 185, 178	8, 571, 115	9, 713, 529	10, 131, 594	10, 434, 852	10, 570, 733	11, 248, 242
1918			1, 038, 078	3, 770, 611		6, 811, 351	7, 777, 159	8, 706, 420	9, 571, 414	10, 281, 139	10, 773, 863	11, 048, 652	11, 906, 480
1919			142, 625	1, 835, 214		4, 929, 104	6, 305, 054	7, 604, 320	8, 844, 368	9, 396, 646	10, 008, 920	10, 307, 120	11, 325, 532
1920			351, 589	2, 249, 606		5, 754, 532	7, 508, 633	8, 914, 642	10, 141, 293	10, 876, 263	11, 554, 648	12, 014, 742	13, 270, 970
1921			485, 787	2, 920, 392		5, 497, 364	6, 646, 354	7, 274, 201	7, 639, 961	7, 790, 656	7, 882, 356	7, 912, 452	7, 977, 778
1922			806, 189	3, 866, 396		6, 978, 321	8, 139, 215	8, 869, 978	9, 319, 601	9, 488, 852	9, 597, 330	9, 648, 261	9, 729, 306
1923			1, 142, 660	3, 231, 555		6, 409, 391	7, 556, 042	8, 369, 498	9, 243, 380	9, 549, 015	9, 804, 992	9, 944, 032	10, 170, 694
1924	21, 795	135, 901	947, 494	[2] 2, 665, 793	4, 527, 668	7, 615, 981	9, 715, 643	11, 162, 235	12, 237, 659	12, 792, 294		13, 306, 813	13, 639, 399
1925	161, 632	579, 291	1, 886, 399	[2] 4, 282, 066	7, 126, 248	9, 518, 946	11, 207, 197	12, 260, 352	13, 870, 507	14, 831, 846		15, 499, 893	16, 122, 516
1926 [3]	47, 770	182, 240	697, 182	[2] 2, 510, 818	5, 642, 999	8, 732, 264	11, 257, 124	12, 958, 501	14, 646, 369	15, 544, 840		16, 617, 285	

Division of Crop and Livestock Estimates. Compiled from reports of Bureau of the Census; quantities are given in running bales, except that round bales are counted as half bales. Linters not included.

[1] Includes cotton ginned after Jan. 16 and estimated quantities not ginned on Mar. 1. Quantities in Table 321 converted from running bales, average weight, by deducting average weight of bagging and ties, by States.

[2] Sept. 16.

[3] Preliminary.

TABLE 243.—*Cotton: Acreage and yield per acre in specified countries, average 1909–10 to 1913–14, 1921–22 to 1925–26, annual 1924–25 to 1926–27*

Country	Acreage: Average, 1909–10 to 1913–14	Acreage: Average, 1921–22 to 1925–26	Acreage: 1924–25	Acreage: 1925–26	Acreage: 1926–27	Yield of lint per acre: Average, 1909–10 to 1913–14	Yield of lint per acre: Average, 1921–22 to 1925–26	Yield of lint per acre: 1924–25	Yield of lint per acre: 1925–26	Yield of lint per acre: 1926–27
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
United States	34,152	37,616	41,360	46,053	47,653	182	146	158	167	187
India	22,503	23,727	26,801	27,960	25,006	76	91	91	86	79
Egypt	1,743	1,768	1,856	1,998	1,854	399	367	388	390	386
China		4,600	4,848							
Brazil	[1] 887	1,475	1,573	1,320		209	184	184	218	
Russia (Asiatic)	1,569	772	1,247	1,614	1,663	276	188	185	218	217
Mexico	253	365	520	429	567	353	268	274	225	334
Chosen (Korea)	146	406	422	485	522	67	128	137	123	141
Uganda	58	427	534	617	586	168	122	134	123	
Peru	[2] 163	284	301	284			334	327	337	
Anglo Egyptian Sudan	44	126	130	230		157	174	150	229	
Argentina	5	156	258	272		221	185	124	237	
Total countries reporting 1909–10 to 1925–26	59,799	64,975	72,665	79,154						
Estimated world total, excluding China	62,500	68,800	77,000	83,400						

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture, except as otherwise stated. Data for crop year as given at the head of the table are for crops harvested between Aug. 1 and July 31 of the following year. This applies to both Northern and Southern Hemispheres. For the United States prior to 1914 the figures apply to the harvest year beginning Sept. 1.

[1] Average for three years.
[2] Average 1914–15 to 1918–19.

TABLE 244.—*Cotton: Production in specified countries, average 1909–10 to 1913–14, 1921–22 to 1925–26, annual 1922–23 to 1926–27*

[Bales of 478 pounds net]

Country	Year beginning Aug. 1						
	Average, 1909–10 to 1913–14	Average, 1921–22 to 1925–26	1922–23	1923–24	1924–25	1925–26	1926–27, preliminary
NORTH AMERICA							
United States [1]	13,083,000	11,518,000	9,762,000	10,140,000	13,628,000	16,104,000	18,618,000
Mexico	187,000	204,830	201,540	175,380	298,000	202,200	396,000
Total North American countries reporting 1909–10 to 1925–26	13,220,000	11,722,830	9,963,540	10,315,380	13,926,000	16,306,000	19,014,000
SOUTH AND CENTRAL AMERICA AND WEST INDIES							
Peru	110,000	198,439	197,115	202,983	205,985	[2] 200,000	----------
Ecuador	[8] 297	7,020	4,312	11,079	11,500	[2] 6,100	[2] 6,340
Brazil	387,000	567,900	553,000	576,000	605,000	601,500	----------
Paraguay	[4] 92	9,469	5,844	16,265	12,222	10,400	----------
Argentina	2,314	60,487	25,994	58,846	66,668	134,800	----------
Guatemala	[5] 75	847	162	709	1,549	1,600	----------
Haiti	[3] 9,300	16,572	15,505	15,500	15,300	15,000	----------
Dominican Republic [3]	[6] 992	[7] 409	374	448	----------	----------	----------
Porto Rico	[8] 1,319	1,357	1,046	1,020	1,900	1,900	----------
Salvador	----------	[5] 11,250	----------	----------	11,300	11,000	----------
British West Indies	6,058	4,598	5,555	5,329	4,579	4,395	----------
Total South and Central American countries and West India reporting 1909–10 to 1925–26	513,047	847,226	795,565	857,105	897,006	955,617	----------
EUROPE							
Italy	5,212	[7] 4,700	4,600	5,000	4,500	----------	----------
Yugoslavia	922	337	259	203	385	600	----------
Greece	16,770	11,605	8,377	11,135	18,825	14,800	[2] 35,000
Bulgaria	842	1,708	964	1,795	2,959	1,700	3,000
Malta	433	377	161	100	480	655	[2] 424
Spain	----------	[6] 754	218	314	1,266	[2] 1,218	3,000
Total European countries reporting 1909–10 to 1925–26	1,275	2,085	1,125	1,895	3,439	2,355	----------
AFRICA							
Algeria	[7] 1,370	1,929	392	793	2,230	5,800	11,000
Morocco (French)	----------	----------	----------	----------	----------	800	900
French West Africa:							
Dahomey [3]	664	[6] 1,422	1,448	1,483	[2] 1,483	----------	----------
Ivory Coast [3]	[5] 212	[6] 916	914	1,211	[2] 1,212	----------	----------
French Guinea [3]	[8] 167	352	346	375	404	461	----------
Senegal	----------	1,909	2,075	1,199	1,845	2,767	----------
French Sudan	----------	[5] 5,189	5,535	----------	4,843	----------	----------
Upper Volta	----------	6,721	231	4,612	10,972	11,069	----------
French Togo	2,312	[6] 4,720	3,538	4,598	7,615	----------	----------
Nigeria	8,702	23,577	14,082	21,368	30,475	39,330	----------
French Equatorial Africa	----------	[6] 1,170	1,073	1,172	1,408	----------	----------
Egypt	1,453,000	1,356,400	1,391,000	1,353,000	1,507,000	1,629,000	1,497,000
Anglo-Egyptian Sudan	14,455	45,844	23,687	38,221	40,665	110,000	120,000
Italian Somaliland	[8] 510	[6] 1,336	1,196	1,750	2,305	5,000	----------
Eritrea	[8] 1,022	[6] 1,259	692	1,384	2,780	----------	----------
Gold Coast	103	[6] 690	660	837	1,250	----------	----------
Belgian Congo	----------	[6] 11,442	6,964	15,833	18,450	----------	----------
Kenya	552	[6] 3,605	1,004	1,674	11,281	----------	----------
Uganda	20,338	108,971	73,678	107,619	164,046	159,100	----------

[1] Linters not included. Production of linters during this period has been: Average 1909–10 to 1913–14, 502,711 bales; 1922–23, 607,779 bales; 1923–24, 668,600 bales; 1924–25, 897,375 bales; 1925–26, 1,114,877 bales.
[2] From an unofficial source.
[3] Exports.
[4] For season 1915–16.
[5] Average for two years.
[6] Average for four years.
[7] Average for three years.
[8] For one year only.

TABLE 244.—*Cotton: Production in specified countries, average 1909–10 to 1913–14, 1921–22 to 1925–26, annual 1922–23 to 1926–27*—Continued

[Bales of 478 pounds net]

Country	Year beginning Aug. 1						
	Average, 1909–10 to 1913–14	Average, 1921–22 to 1925–26	1922–23	1923–24	1924–25	1925–26	1926–27, preliminary
AFRICA—continued							
Tanganyika	[3] [6] 7,971	11,106	6,004	9,568	15,726	18,100	20,755
Nyasaland	4,603	4,751	4,529	3,377	5,538	6,459	
Northern Rhodesia	[7] 307	[6] 239	85	397	400		
Southern Rhodesia		[7] 1,730	2	1,179	4,010		
Mozambique	388	2,699	1,504	5,955	[illegible]	2,500	
Union of South Africa	76	10,870	5,218	7,000	[illegible]	26,200	
Total African countries reporting 1909–10 to 1925–26	1,501,684	1,551,749	1,513,390	1,532,335	1,764,201	1,975,089	
ASIA							
Cyprus	1,938	2,003	1,259	1,680	2,556	2,600	
Turkey, Asiatic	[8] 102,116	60,114	[2] 30,000	[2] 57,000	78,400	105,172	[2] 120,000
Syria		9,380	3,700	8,300	20,800	12,700	
Russia, Asiatic	904,900	302,980	55,300	196,400	483,500	736,600	755,500
Iraq	96	1,062	251	837	2,092	2,080	[2] 2,929
Persia	136,000	[2] [6] 110,000					
India	3,585,000	4,493,600	4,247,000	4,320,000	5,085,000	5,053,000	4,144,000
China [9]	694,600	2,024,200	2,318,000	1,993,000	2,179,000	2,114,000	1,584,000
Japanese Empire:							
Japan	4,704	[7] 2,877	2,883	2,316			
Chosen (Korea)	20,392	108,341	103,400	110,046	121,088	125,000	153,815
French Indo-China	[8] 13,800	[10] 10,886	[10] 12,084	[10] 9,086	[10] 10,470	[10] 10,977	
Dutch East Indies [11]	18,242	[8] 7,118	6,995	7,321			
Siam	[8] 3,653	4,023	5,005	3,062	4,330	4,062	
Total Asiatic countries reporting 1909–10 to 1925–26	4,529,683	4,921,833	4,424,048	4,640,274	5,716,950	5,932,239	
OCEANIA							
Australia	75	8,474	8,796	10,042	14,435	6,300	
New Hebrides	[7] 547	[6] 2,091	2,812	1,828	2,134		
Total Oceania reporting 1909–10 to 1925–26	75	8,474	8,796	10,042	14,435	6,300	
Total all countries reporting 1909–10 to 1925–26	19,765,764	19,054,197	16,706,464	17,357,031	22,322,031	25,177,600	
Estimated world total, including China	20,900,000	21,400,000	19,300,000	19,700,000	24,900,000	27,700,000	

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture except as otherwise stated. Data for crop year as given at the head of the table are for crops harvested between Aug. 1 and July 31 of the following year. For the United States prior to 1914 the figures apply to the year beginning Sept. 1.

[2] From an unofficial source.
[3] Exports.
[6] Average for four years.
[7] Average for three years.
[8] For one year only.
[9] For 1922–23 to 1925–26, Chinese Economic Bulletin quoting the Chinese Mill Owners' Association. The figures represent the crop in the most important Provinces where the commercial crop is grown. The average 1909–10 to 1913–14 is the commercial crop of China as estimated by the United States Bureau of the Census.
[10] Annam and Cambodia only.
[11] Includes Java and Madura and the Outer Possessions.

TABLE 245.—*Cotton: World production, 1909–10 to 1926–27*

[Thousand bales of 478 pounds net i. e., 000 omitted]

Year	Production in countries reporting all years 1909–10 to 1925–26	Estimated world total, excluding China	Estimated world total, including China	Estimated world total commercial crop [1]	Six principal producing countries: United States	India	Egypt	China [2]	Brazil	Russia (Asiatic)
1909–10	16,509	16,800	....	20,859	10,005	3,998	1,036	....	....	817
1910–11	18,160	18,460	....	18,856	11,609	3,254	1,555	....	....	1,006
1911–12	21,638	21,990	....	22,247	15,693	2,730	1,530	....	360	969
1912–13	20,797	21,190	....	21,550	13,703	3,702	1,554	....	418	946
1913–14	22,024	22,350	....	22,612	14,156	4,239	1,588	....	477	1,104
1914–15	23,924	24,270	....	24,964	16,135	4,359	1,337	....	465	1,270
1915–16	17,486	17,750	....	18,419	11,192	3,128	989	....	339	1,512
1916–17	18,132	18,370	19,910	18,924	11,450	3,759	1,048	1,534	327	1,100
1917–18	17,380	17,660	19,750	18,140	11,302	3,393	1,304	2,092	414	634
1918–19	17,612	17,790	20,850	18,755	12,041	3,328	999	3,059	406	161
1919–20	18,549	18,730	21,330	20,220	11,421	4,853	1,155	2,599	461	81
1920–21	18,908	19,110	20,900	19,665	13,440	3,013	1,251	1,883	476	58
1921–22	13,714	13,930	15,450	15,334	7,954	3,753	902	1,517	504	43
1922–23	16,706	16,980	19,900	17,959	9,762	4,247	1,391	2,318	558	55
1923–24	17,357	17,710	19,700	19,005	10,140	4,320	1,353	1,993	576	196
1924–25	22,322	22,720	24,900	23,825	13,628	5,095	1,507	2,179	605	484
1925–26	25,178	25,590	27,700	26,618	16,104	5,053	1,629	2,114	602	737
1926–27 [3]	....	....	....	....	18,618	4,144	1,407	1,584	....	756

Division of Statistical and Historical Research. Data for crop year as given are for crops harvested between Aug. 1 and July 31 of the following year. For the United States prior to 1914 the figures apply to the year beginning Sept. 1.

[1] Figures as reported by the United States Bureau of the Census, including the cotton destined to enter commercial channels for factory purposes. Estimates of the commercial crop in China are included.

[2] Chinese Cotton Mill Owners' Association. Figures represent the crop in the most important cotton-producing Provinces where the commercial crop is grown. Most of the cotton produced in other Provinces is used for home hand-loom consumption.

[3] Preliminary.

TABLE 246.—*Cotton: Estimated monthly marketings by farmers, 1916–1925*

Year beginning August	Percentage of year's sales [1]: Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Season
1916	3.9	14.6	23.0	21.6	15.0	6.4	4.0	3.9	3.0	2.5	1.6	.5	100
1917	2.5	11.3	23.0	22.7	16.2	8.2	5.8	4.5	2.6	1.3	1.0	.9	100
1918	2.3	10.9	18.1	16.4	13.6	5.4	4.4	4.6	4.6	7.5	6.8	4.4	100
1919	1.4	9.5	21.0	22.2	17.4	8.8	5.6	4.9	3.2	2.7	1.7	1.6	100
1920	3.1	10.0	16.2	15.7	11.0	6.4	5.6	6.0	6.7	6.9	6.8	5.6	100
1921	3.6	14.0	22.3	17.1	12.1	5.9	4.3	4.6	4.6	5.9	3.0	2.6	100
1922	5.2	16.8	25.3	19.8	12.8	5.9	4.4	3.7	2.0	1.0	1.5	1.6	100
1923	4.1	16.3	24.6	24.9	13.3	5.8	3.1	2.4	1.7	1.3	.9	1.6	100
1924	3.3	15.2	25.2	22.3	14.5	7.0	5.3	3.4	1.6	1.0	.6	.6	100
1925	6.5	19.3	23.1	17.6	12.0	6.5	4.2	3.1	2.3	1.7	2.1	1.6	100

Division of Crop and Livestock Estimates.

[1] As reported by about 7,500 cotton growers, supplemented by records of State weighers, cooperative associations, and cotton dealers.

Table 247.—*Cotton: International trade, average 1910–1914, annual 1924–1926*

[Thousand bales—i. e., 000 omitted]

Country	Year ended June 30							
	Average, 1910–1914		1924		1925		1926, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	(1) (2)	[2] 1		25		24		65
Australia	[2] 3	(1) (2)	2	7	4	11		[3] 8
British India	57	2,154	72	3,000	[4] 89	[4] 3,331	[4] 96	[4] 3,218
Egypt	(1)	1,444	(1)	1,409	(1)	1,[illegible]04	(1)	1,499
Syria and Lebanon [3]				[5] 7		5		7
United States	232	8,640	305	5,784	334	8,239	336	8,110
PRINCIPAL IMPORTING COUNTRIES								
Algeria [3]	(1)	(1)	[5] 1		1		1	
Austria			128	1	139	1	160	2
Austria-Hungary [2]	906	12						
Belgium	[6] 663	[6] 278	328	49	333	15	395	2
Bulgaria	[2] 4	(1) (2)			(1)		2	
Canada	155		180		230		274	
Ceylon [3]			[5] 5		4		6	
Cuba	3	(1)	6					
Czechoslovakia			463	[2] 2	578	26	561	13
Denmark	[2] 26	(1)	23		21		52	
Estonia [3]			[5] 14		21		21	
Finland	[2] 37		36		28		40	
France	1,440	337	1,344	98	1,540	91	1,606	93
Germany	2,142	221	1,121	97	1,467	163	1,435	205
Greece	[2] 10	(1)	[3, 5] 6		[3] 10		[3, 7] 1	
Hungary			12	(1)	11	(1)	20	(1)
Italy	962	(1)	894	2	1,073	3	1,035	2
Japan	[2] 1,405		[3] 2,260		[3] 2,419		[3] 3,213	
Latvia [3]			[5] 3		5		5	
Netherlands	[2] 277	[2] 145	78	4	148	2	160	2
Norway	[2] 18		12		14		10	
Poland [3]			186		214		218	
Rumania	[2] 2		19	(1)	9	(1)		
Spain	288	1	328	1	439	1	418	3
Sweden	[2] 93	[2] 1	96		89		100	
Switzerland	[2] 113		[5] 126		137		138	
United Kingdom	4,143		2,742		3,654		3,338	
Total, 33 countries	13,019	13,434	10,781	10,546	12,992	13,416	13,663	13,139

Division of Statistical and Historical Research. Official sources except where otherwise noted. Bales of 500 pounds gross weight or 478 pounds net. The figures for cotton refer to ginned and unginned cotton and linters, but not to mill waste, cotton batting, scarto (Egyptian and Sudan). Wherever unginned cotton has been separately stated in the original reports it has been reduced to ginned cotton in this statement at the ratio of 3 pounds unginned to 1 pound ginned.

[1] Less than 500 bales.
[2] Year ended Dec. 31.
[3] International Crop Report and Agricultural Statistics.
[4] Sea trade only.
[5] Eleven months.
[6] Three-year average.
[7] Two months.

Table 248.—*Cotton: Estimated price per pound, received by producers, United States, 1909–1926*

Year beginning August	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Weighted av.
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Average:													
1909–1913	12.3	12.2	12.1	12.1	12.2	12.2	12.3	12.4	12.4	12.7	12.7	12.7	12.2
1914–1920	21.7	21.1	21.1	20.8	20.2	19.9	19.5	19.7	20.1	20.4	21.2	21.8	20.4
1921–1925	21.4	21.4	22.5	22.1	22.4	22.7	22.9	22.5	22.5	22.1	22.5	22.3	22.2
1909	11.5	12.2	13.2	13.8	14.2	14.3	14.0	14.0	14.0	14.1	14.0	14.1	13.6
1910	14.4	13.8	13.6	14.0	14.2	14.4	14.1	13.9	14.0	14.4	14.5	13.8	14.0
1911	12.5	11.0	9.6	8.8	8.6	8.7	9.4	10.0	10.5	11.0	11.1	11.6	9.6
1912	11.6	11.2	11.0	11.4	12.0	12.0	11.8	11.8	11.7	11.6	11.6	11.6	11.5
1913	11.6	12.6	13.2	12.6	12.0	11.8	12.2	12.2	12.0	12.3	12.4	12.4	12.5
1914	10.6	8.2	7.0	6.6	6.7	7.0	7.4	7.8	8.6	8.8	8.6	8.4	7.4
1915	8.3	9.8	11.4	11.4	11.4	11.4	11.3	11.3	11.5	11.8	12.4	12.6	11.2
1916	13.6	15.0	16.8	18.8	18.4	17.0	16.4	17.0	18.4	19.6	22.4	24.5	17.3
1917	23.8	23.4	25.3	27.5	28.3	29.3	30.0	31.0	30.2	28.0	28.0	28.2	27.1
1918	30.0	32.0	30.6	28.4	28.2	26.8	24.4	24.2	25.2	27.8	30.3	31.8	28.8
1919	31.4	30.8	33.9	36.0	35.8	36.0	36.2	36.8	37.5	37.4	37.3	37.1	35.2
1920	34.0	28.3	22.4	16.6	12.7	11.6	11.0	9.8	9.4	9.6	9.7	9.7	15.8
1921	11.2	16.2	18.8	17.0	16.2	15.9	15.7	16.0	16.0	17.3	19.6	20.6	17.0
1922	20.9	20.6	21.2	23.1	24.2	25.2	26.8	28.0	27.6	26.2	25.9	24.8	22.8
1923	23.8	25.6	28.0	29.9	32.1	32.5	31.4	27.7	28.7	28.1	27.8	27.3	28.7
1924	27.8	22.2	23.1	22.5	22.2	22.7	23.0	24.5	23.7	23.0	23.0	23.4	22.9
1925	23.4	22.5	21.5	18.1	17.4	17.4	17.6	16.5	16.6	16.0	16.1	15.4	19.6
1926	16.1	16.8	11.7	11.0	10.0	------	------	------	------	------	------	------	------

Division of Crop and Livestock Estimates. Mean of prices reported on 1st of month and 1st of succeeding month, August, 1909–December, 1923.

Table 249.—*Cotton: Estimated price per pound, received by producers, Dec. 1, average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Mo	20.8	15.0	21.5	32.5	23.0	12.0	10.0	La	22.0	15.0	24.0	30.3	22.4	18.1	11.0
Va	22.7	16.4	23.0	32.0	23.0	19.0	11.4	Okla	21.4	15.4	23.0	29.6	22.2	17.0	9.7
N. C	22.7	16.4	24.5	30.8	22.6	19.0	11.5	Tex	22.2	16.1	23.5	30.4	22.4	18.5	10.8
S. C	22.6	16.0	24.3	32.0	22.1	18.8	11.7	Ariz	27.8	27.0	30.0	34.0	26.4	21.5	13.3
Ga	22.8	16.6	23.9	32.0	22.4	19.0	11.1	Calif	24.2	17.0	26.0	32.0	24.0	22.0	14.0
Fla	22.2	18.0	23.0	28.8	22.5	18.8	10.2	U. S	22.4	16.2	23.8	31.0	22.6	18.2	10.9
Tenn	22.4	16.0	24.5	32.0	23.2	16.2	10.0								
Ala	22.7	16.0	24.0	31.8	22.7	18.9	10.7								
Miss	23.3	16.6	24.1	32.5	23.7	19.5	11.6								
Ark	22.1	16.1	23.6	31.9	22.8	16.1	11.0								

Division of Crop and Livestock Estimates.

TABLE 250.—*Cotton, middling: Average spot price per pound at nine markets, 1920–1926*

NORFOLK

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1920	37.00	29.06	21.23	17.34	14.46	14.85	12.89	11.37	11.20	11.60	10.76	11.31	16.92
1921	12.57	19.10	18.66	17.12	17.28	16.96	16.88	17.27	17.12	19.46	21.44	22.17	18.00
1922	21.50	20.99	22.48	25.40	25.44	27.59	28.75	30.08	28.13	26.22	27.89	25.96	25.87
1923	24.20	27.79	28.65	33.16	34.18	33.65	31.79	28.41	30.37	30.37	29.31	29.91	30.15
1924	27.31	23.08	23.56	23.85	23.59	23.68	24.65	25.50	24.43	23.85	24.20	24.89	24.38
1925	23.39	23.39	20.86	19.87	19.18	20.07	19.82	18.63	18.26	18.10	17.77	17.98	19.78
1926	17.79	16.11	12.43	12.28	11.91	------	------	------	------	------	------	------	------

AUGUSTA

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
1920	35.03	28.17	21.60	17.75	14.62	14.46	12.67	10.82	11.00	11.36	10.62	11.29	16.62
1921	12.83	19.49	18.74	16.93	17.17	16.74	16.60	17.09	16.88	19.30	21.49	22.38	17.97
1922	21.55	20.93	22.38	25.18	25.46	27.66	28.78	30.07	28.14	26.84	28.15	25.84	25.92
1923	24.63	27.76	28.75	33.16	34.28	33.55	31.61	28.73	30.08	30.06	29.19	28.94	30.06
1924	27.08	22.72	23.29	23.77	23.44	23.50	24.43	25.30	24.48	23.75	24.44	24.68	24.24
1925	23.14	23.10	20.50	19.64	19.06	19.95	19.38	18.22	17.83	17.79	17.55	18.16	19.53
1926	17.56	15.68	12.20	12.17	11.69	------	------	------	------	------	------	------	------

SAVANNAH

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
1920	34.69	28.74	22.12	18.38	15.68	15.62	13.95	11.75	11.48	11.83	10.90	11.31	17.20
1921	12.74	19.64	19.30	17.17	17.39	17.06	16.72	17.36	17.04	19.39	21.52	22.09	18.12
1922	21.29	20.88	22.37	25.19	25.61	27.58	28.75	30.11	28.16	26.44	28.29	25.74	25.87
1923	24.45	27.85	28.77	33.09	34.18	33.38	31.54	28.27	30.03	30.14	29.13	29.12	30.00
1924	26.74	22.89	23.59	24.00	23.70	23.68	24.58	25.46	24.89	23.42	24.22	24.52	24.27
1925	23.19	23.19	20.70	19.76	19.20	19.93	19.46	18.27	18.05	17.99	17.56	17.97	19.61
1926	17.55	15.82	12.30	12.15	11.79	------	------	------	------	------	------	------	------

MONTGOMERY

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
1920	36.38	27.84	21.24	17.97	14.40	13.86	12.32	10.39	10.53	10.89	10.09	10.53	16.37
1921	11.89	18.73	18.40	16.68	16.92	16.46	16.18	16.55	16.15	18.66	21.06	22.05	17.48
1922	21.28	20.17	21.75	24.86	25.02	27.05	28.61	29.81	27.85	25.97	27.86	25.70	25.49
1923	24.23	27.61	28.68	32.87	34.00	33.34	31.50	28.34	29.81	29.78	28.95	28.67	29.82
1924	26.36	22.05	22.67	23.09	22.76	23.04	23.97	24.75	24.10	23.54	24.08	24.09	23.71
1925	22.59	22.47	20.13	19.10	18.60	19.44	18.87	17.63	17.40	17.21	16.96	17.41	18.96
1926	17.26	15.25	11.64	11.57	11.22	------	------	------	------	------	------	------	------

MEMPHIS

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
1920	36.85	31.00	21.68	18.28	14.75	14.46	13.48	11.65	11.25	11.63	11.06	10.82	17.20
1921	12.17	19.46	19.71	18.27	18.15	17.80	17.01	17.28	17.00	19.19	21.79	22.72	18.38
1922	22.07	21.19	22.09	25.31	25.80	27.68	28.74	30.63	29.02	26.89	28.58	26.51	26.21
1923	24.08	27.73	29.28	33.54	34.67	34.07	32.31	28.92	30.35	30.64	30.05	29.42	30.42
1924	27.37	23.10	23.24	23.55	23.61	23.54	24.29	25.56	24.40	23.34	24.00	24.28	24.19
1925	23.69	23.26	21.50	20.20	19.47	19.79	19.90	18.43	18.01	17.93	17.36	17.66	19.77
1926	17.83	16.14	12.69	12.42	11.85	------	------	------	------	------	------	------	------

LITTLE ROCK

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
1920	34.89	28.28	21.38	18.23	14.96	14.45	13.35	11.49	10.63	11.35	10.68	10.58	16.69
1921	11.81	19.60	19.75	18.12	17.84	17.57	16.90	16.89	16.87	18.90	21.17	22.07	18.12
1922	21.47	20.76	21.80	25.22	25.53	27.15	28.46	30.02	28.24	26.41	27.88	26.39	25.78
1923	24.20	27.64	29.10	33.55	34.41	33.94	31.76	28.70	30.15	30.20	29.60	29.48	30.22
1924	27.11	22.55	23.24	23.83	23.34	23.62	24.57	25.59	24.82	23.69	24.52	24.86	24.27
1925	23.51	23.44	21.40	20.30	19.56	20.03	19.31	17.91	17.98	17.85	17.26	17.89	19.70
1926	17.67	16.19	12.52	12.13	11.71	------	------	------	------	------	------	------	------

TABLE 250.—*Cotton, middling; Average spot price per pound at nine markets, 1920–1926*—Continued

DALLAS

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1920	32.74	26.40	20.69	17.08	18.79	13.63	12.16	10.64	10.53	11.20	10.23	10.50	15.79
1921	12.11	19.26	19.17	17.18	17.12	16.75	16.44	16.93	16.76	19.08	21.37	22.05	17.84
1922	21.19	20.14	21.67	24.75	24.79	26.66	27.86	29.86	27.79	25.87	27.72	25.34	25.31
1923	23.49	27.05	28.51	32.92	33.94	33.25	31.14	27.89	29.84	29.88	28.84	29.20	29.60
1924	27.33	22.11	22.78	22.96	22.74	23.10	24.33	25.47	24.37	23.28	23.93	24.56	23.91
1925	23.26	23.38	21.18	20.02	19.15	19.66	19.40	18.23	18.08	17.93	17.49	17.92	19.64
1926	17.48	15.60	11.88	11.52	11.80	------	------	------	------	------	------	------	------

HOUSTON

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
1920	32.94	27.33	20.98	17.56	14.16	13.95	12.62	10.95	10.89	11.85	11.02	11.09	16.33
1921	13.06	20.02	19.64	17.65	17.73	17.20	17.05	17.51	17.24	19.67	22.18	22.51	18.46
1922	21.59	20.69	22.20	25.25	25.45	27.61	28.71	30.54	28.59	26.65	28.42	25.62	25.94
1923	24.23	27.78	29.00	33.46	34.63	33.85	31.79	28.60	30.55	30.61	29.55	29.29	30.28
1924	27.09	23.03	23.53	22.92	23.55	23.71	24.88	26.03	25.04	23.82	24.11	24.70	24.50
1925	23.71	23.33	21.20	20.22	19.78	20.52	20.04	18.76	18.37	18.80	17.77	17.96	20.00
1926	17.69	16.43	12.82	12.47	12.18	------	------	------	------	------	------	------	------

GALVESTON

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
1920	33.78	28.15	21.98	18.10	15.00	14.38	12.99	11.76	11.47	12.01	11.27	11.80	16.89
1921	13.83	20.83	20.05	17.90	17.92	17.82	17.10	17.58	17.40	19.75	22.23	22.67	18.64
1922	21.79	20.77	22.28	25.37	25.48	27.54	28.81	30.52	28.68	26.75	28.57	25.87	26.08
1923	24.44	27.80	29.11	33.02	34.70	33.95	31.92	28.85	30.91	30.82	29.74	29.94	30.48
1924	26.01	23.12	22.56	23.92	23.59	23.72	24.78	26.00	25.04	23.92	24.34	24.83	24.67
1925	23.88	23.30	21.20	20.24	19.80	20.69	20.29	18.94	18.52	18.35	17.90	18.05	20.12
1926	17.72	16.49	12.88	12.52	12.26	------	------	------	------	------	------	------	------

[1] Division of Statistical and Historical Research. Compiled from reports of the Cotton Division, average of daily closing quotations. Prices at these markets, 1914–1919, are available in 1925 Yearbook, p. 963, Table 337.

TABLE 251.—*Cotton, middling: Average spot price per pound at New Orleans, 1909–1926*

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1909–1913	12.65	12.38	12.40	12.73	12.95	13.04	13.04	13.07	13.20	13.55	13.63	13.57	13.03
1914–1920	------	20.98	21.48	21.92	21.49	21.71	20.96	21.34	21.88	21.71	22.92	23.07	------
1921–1925	21.65	22.74	22.91	24.01	24.09	24.38	24.30	23.96	23.65	23.65	24.27	23.85	23.62
1909	12.28	12.66	13.48	14.40	14.96	15.23	14.88	14.74	14.64	14.80	14.85	14.93	14.33
1910	14.92	13.49	14.21	14.50	14.85	14.95	14.62	14.54	14.70	15.48	15.26	14.30	14.65
1911	11.96	11.29	9.61	9.35	9.17	9.52	10.31	10.65	11.61	11.72	12.07	12.93	10.84
1912	12.07	11.37	10.95	12.15	12.61	12.58	12.51	12.45	12.44	12.20	12.44	12.34	12.20
1913	12.02	13.11	13.73	13.26	12.98	12.93	12.90	12.95	13.11	13.36	13.79	13.34	13.12
1914	(1)	[2] 8.42	7.02	7.48	7.18	7.87	8.01	8.24	9.43	9.04	9.12	8.71	------
1915	8.94	10.40	11.95	11.50	11.89	12.04	11.45	11.73	11.98	12.61	12.80	13.03	11.68
1916	14.26	15.27	17.24	19.45	18.34	17.23	17.14	17.94	19.51	20.06	24.18	25.41	18.84
1917	25.07	21.68	26.76	28.67	29.67	31.07	30.91	32.76	33.05	28.96	30.71	29.50	28.96
1918	30.23	33.22	31.18	29.75	29.44	28.84	26.97	26.84	26.70	29.23	32.09	33.03	29.87
1919	31.38	30.38	35.28	39.58	39.86	40.28	39.39	40.69	41.41	40.31	40.49	39.41	38.21
1920	34.03	27.48	20.95	17.65	14.59	14.53	12.85	11.08	11.17	11.80	11.03	11.49	16.55
1921	12.78	19.25	18.90	17.27	17.19	16.53	16.36	16.74	16.90	19.31	21.68	22.01	17.92
1922	21.55	20.74	22.06	25.34	25.40	27.51	28.78	30.43	28.42	26.63	28.61	25.73	25.94
1923	24.22	27.71	29.18	33.69	34.86	33.99	31.90	28.74	30.41	30.70	29.43	29.23	30.03
1924	26.65	22.72	23.46	22.95	23.66	23.86	24.61	25.52	24.52	23.54	24.07	24.05	24.21
1925	23.97	23.90	20.86	19.82	19.27	20.28	19.88	18.35	18.11	18.06	17.54	18.24	19.71
1926	18.01	16.14	12.68	12.52	12.22	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Prior to Aug. 16, 1915, compiled from quotations in Market Reports of the New York Cotton Exchange, except Sept. 23 to Nov. 16, 1914, when the exchange was closed, quotations for which time were taken from the New York Commercial and Financial Chronicle; from Aug. 16, 1915, compiled from daily reports of the Cotton Division; average of daily closing quotations. Prices 1900–1908 are available in 1924 Yearbook, p. 756, Table 313.

[1] Market closed. [2] No quotations prior to Sept. 23. Average for 7 days' business.

TABLE 252.—*Cotton, middling: Monthly average spot price per pound, New York, 1909–1926*

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Average:													
1909–1913	13.15	12.69	12.66	13.00	13.15	13.02	13.02	13.21	13.41	13.66	13.59	13.55	13.18
1914–1920	------	------	------	22.45	22.00	22.21	20.92	21.97	22.54	22.25	23.23	24.15	------
1921–1925	22.72	23.68	23.74	24.71	24.76	24.90	24.74	24.45	24.18	24.36	24.64	24.80	24.31
1909	12.75	13.06	13.99	14.77	15.25	14.87	14.84	15.06	15.10	15.45	15.10	15.74	14.66
1910	16.27	13.96	14.48	14.77	15.07	14.90	14.39	14.51	14.87	15.80	15.48	18.99	14.87
1911	12.53	11.31	9.63	9.43	9.37	9.55	10.34	10.63	11.57	11.62	11.65	12.57	10.85
1912	12.04	11.73	11.12	12.36	13.01	13.07	12.80	12.61	12.29	11.98	12.25	12.26	12.29
1913	12.14	13.44	14.06	13.68	13.04	12.72	12.83	13.27	13.28	13.44	13.47	13.17	13.21
1914	(1)	(1)	(1)	[2] 7.67	7.53	8.28	8.54	9.01	10.26	9.81	9.68	9.22	------
1915	9.41	10.83	12.37	11.89	12.33	12.33	11.73	11.99	12.06	12.94	12.97	13.05	11.98
1916	14.64	15.79	17.99	19.92	18.29	17.59	15.90	18.46	[illegible]	20.74	25.33	26.30	19.28
1917	25.49	23.05	28.02	29.78	30.74	32.26	31.76	33.74	31.85	27.57	30.39	31.54	29.68
1918	33.88	35.09	32.42	29.69	30.22	29.10	26.27	27.74	28.82	30.58	32.96	35.33	31.01
1919	32.10	30.60	34.98	38.40	39.19	39.26	38.77	41.29	42.30	41.25	39.27	41.20	38.29
1920	36.28	30.07	22.06	18.81	15.68	16.63	15.44	11.74	12.14	12.84	12.00	12.41	17.89
1921	12.79	19.96	19.63	18.01	18.30	17.94	17.90	18.32	18.06	20.75	22.10	22.27	18.92
1922	21.86	21.35	22.73	25.64	25.65	27.55	28.63	30.55	28.86	27.20	28.52	26.26	25.24
1923	25.20	23.06	30.06	34.73	35.92	34.19	31.88	28.39	30.30	31.54	29.96	32.07	31.11
1924	29.02	24.24	24.51	24.22	23.85	23.98	24.70	25.64	24.54	23.41	24.13	24.68	24.74
1925	23.72	23.79	21.77	20.94	20.06	20.84	20.60	19.35	19.13	18.92	18.51	18.71	20.53
1926	18.57	17.01	13.14	12.86	12.68	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from Market Reports of the New York Cotton Exchange, average of daily closing quotations. Prices, 1889–1908, are available in 1924 Yearbook, p. 759, Table 315.

[1] Cotton Exchange closed on account of the war.
[2] Cotton Exchange opened on Nov. 16. Quotations cover only half month.

TABLE 253.—*Cotton: Average closing price per pound, for future delivery, New York, 1925 and 1926*

Year and month	Prices for delivery during						Year and month	Prices for delivery during					
	Jan.	Mar.	May	July	Oct.	Dec.		Jan.	Mar.	May	July	Oct.	Dec.
1925	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	1926	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Jan.	23.59	23.74	24.05	24.25	23.85	[2] 23.79	Jan.	20.10	20.10	19.58	18.97	18.20	18.00
Feb.	24.69	24.43	24.76	25.01	24.78	24.83	Feb.	[2] 17.72	20.09	19.53	18.87	18.13	17.78
Mar.	[2] 24.93	25.16	25.48	25.72	25.12	25.12	Mar.	[2] 17.15	19.18	18.60	18.16	17.49	17.17
Apr.	24.15	[1] 24.30	24.28	24.57	24.29	24.40	Apr.	16.94	[2] 17.10	18.71	18.20	17.37	17.03
May	22.38	[illegible]	22.92	22.95	22.53	22.75	May	17.37	17.50	18.79	18.35	17.52	17.44
June	[1] 22.77	23.04	[2] 23.23	23.37	23.08	23.25	June	16.62	16.78	[2] 16.90	18.00	16.79	16.76
July	23.68	23.99	24.23	23.67	24.13	24.25	July	17.21	17.40	17.56	18.03	17.24	17.19
Aug.	23.08	23.37	23.69	[1] 23.49	23.30	23.58	Aug.	17.19	17.39	17.53	[2] 17.37	17.17	17.15
Sept.	23.18	23.46	23.75	[1] 23.48	23.52	23.83	Sept.	16.38	16.60	16.78	16.78	16.13	16.30
Oct.	20.67	20.95	21.12	20.73	22.02	21.39	Oct.	12.90	13.14	13.35	13.54	13.30	12.82
Nov.	19.78	19.88	19.63	19.16	18.82	20.42	Nov.	12.50	12.73	12.95	13.16	13.32	12.46
Dec.	19.15	19.23	18.91	18.56	18.10	20.16	Dec.	12.17	12.40	12.61	12.81	12.99	12.39

Division of Statistical and Historical Research. Compiled from Market Reports of the New York Cotton Exchange; average of daily closing quotations. 1924 Yearbook, Table 316, contains prices for 1901–1924.

[1] Based on nominal quotations.
[2] Quotations largely nominal.

Table 254.—*Cotton: Average spot price per pound in specified foreign markets, 1912–1926*

LIVERPOOL, AMERICAN MIDDLING [1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1914–1920	27.04	26.18	26.72	27.29	27.01	29.05	28.84	28.20	27.34	26.99	27.79	26.90	27.45
1921–1925	24.86	24.22	24.03	24.25	24.04	24.95	24.87	24.86	24.60	25.33	25.95	25.88	24.90
1912	11.16	11.90	12.34	13.09	13.03	13.37	14.46	13.83	13.55	12.59	13.82	14.31	13.12
1913	14.06	13.97	13.97	14.00	13.58	13.67	13.61	13.38	15.10	15.55	14.94	14.54	14.20
1914	14.34	14.25	14.28	15.02	15.20	15.71	14.74	13.23	12.22	10.53	9.25	8.93	13.14
1915	9.77	10.06	10.46	11.37	10.42	10.47	10.32	10.79	12.24	13.90	13.74	15.03	11.55
1916	15.99	15.61	15.48	15.47	16.77	16.47	15.94	17.54	18.99	20.69	23.05	22.16	17.85
1917	21.76	21.34	24.07	25.23	26.17	34.07	37.65	38.21	35.96	34.85	43.38	44.25	32.24
1918	46.16	45.88	47.19	46.52	42.28	43.89	43.09	45.26	48.44	46.46	43.97	42.30	45.12
1919	37.66	34.53	30.39	33.24	35.70	38.25	38.33	34.06	32.20	38.06	41.99	40.92	36.28
1920	43.61	41.61	45.16	44.17	42.51	44.48	41.83	38.31	31.33	24.41	19.18	14.74	35.94
1921	15.32	12.71	11.78	12.07	12.58	11.66	11.94	13.34	20.70	20.85	18.46	18.84	15.02
1922	18.12	17.75	19.21	18.89	21.42	23.46	24.98	24.90	23.98	24.55	27.96	28.26	22.79
1923	30.64	30.93	31.42	30.29	28.43	31.53	29.28	28.18	31.99	31.96	35.74	36.00	31.37
1924	34.33	32.53	29.77	33.15	32.00	30.74	30.38	31.62	25.06	26.13	26.09	25.73	29.79
1925	25.90	27.17	27.95	26.85	25.83	27.34	27.76	26.28	26.25	23.17	21.51	20.51	25.54
1926	21.68	21.40	20.32	20.31	20.73	19.98	19.76	19.69	19.35	14.51	14.08	13.34	18.76

LIVERPOOL, EGYPTIAN UPPERS, GOOD [2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:													
1914–1920	41.5	43.1	44.4	45.4	43.8	42.0	41.1	41.2	38.3	36.3	38.5	39.3	41.2
1921–1925	33.1	32.2	32.9	33.2	32.7	33.1	32.7	32.7	32.5	32.7	33.3	34.1	32.9
1912	18.0	16.9	17.6	19.3	19.5	21.3	21.3	20.2	19.1	18.3	18.9	19.3	19.1
1913	19.9	20.1	20.2	20.3	20.2	19.7	19.0	18.8	20.0	20.2	20.0	19.5	19.8
1914	18.9	17.9	17.3	17.9	18.1	18.2	17.6	16.5	16.1	13.5	12.6	12.2	16.4
1915	12.2	12.8	14.0	15.5	14.5	14.4	13.8	14.1	15.4	18.1	17.9	18.6	15.1
1916	21.9	22.5	22.4	21.6	22.4	23.5	23.7	23.7	27.2	31.2	39.5	39.6	26.6
1917	39.7	41.9	44.5	50.5	52.0	55.4	60.3	60.9	52.0	46.7	51.6	54.4	50.8
1918	53.8	51.5	54.9	56.3	54.0	52.6	54.4	55.8	55.4	54.3	51.7	50.4	53.8
1919	50.3	50.0	49.3	48.3	48.3	48.4	46.4	48.8	48.8	53.4	67.0	76.3	52.9
1920	94.0	105.0	108.7	107.6	97.1	81.3	71.6	68.6	53.4	37.0	29.4	23.4	73.1
1921	24.6	20.8	19.6	21.5	18.8	18.8	18.0	18.6	29.3	33.3	28.3	29.4	23.4
1922	28.8	27.4	28.4	26.8	28.1	29.7	29.4	28.1	27.4	27.3	30.7	31.2	28.6
1923	31.9	32.5	33.9	33.0	30.4	31.9	31.0	31.5	33.4	33.5	39.6	41.5	33.7
1924	39.7	39.0	37.5	41.2	43.9	43.3	43.6	45.6	35.5	34.3	35.4	37.5	39.7
1925	40.3	41.3	45.1	43.6	42.1	41.6	41.4	39.5	37.1	35.0	32.6	30.8	39.2
1926	20.9	28.5	26.2	25.9	27.3	26.2	25.2	26.0	28.0	23.8	22.2	19.4	25.7

LIVERPOOL, NO. 1 OOMRAS, FULLY GOOD [2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:													
1914–1920	22.3	21.4	21.5	26.8	21.6	23.9	23.0	22.8	22.9	23.3	22.7	21.7	22.4
1921–1925	19.6	19.3	18.4	18.5	17.8	18.6	18.6	19.0	19.7	20.0	20.6	20.8	19.2
1912	10.3	10.8	10.9	11.3	11.6	11.7	12.3	12.2	11.9	11.6	12.1	12.5	11.6
1913	12.7	12.8	12.7	12.5	12.2	11.9	11.8	11.6	12.9	12.9	12.8	12.5	12.4
1914	12.0	11.5	11.5	11.5	11.4	11.0	10.6	9.7	9.1	8.8	7.9	7.7	10.5
1915	8.5	8.4	8.5	9.2	8.9	9.1	8.9	9.1	9.7	10.9	10.7	11.9	9.4
1916	12.6	12.4	12.1	11.9	13.0	12.8	12.9	14.2	15.0	15.8	17.6	16.6	13.9
1917	16.9	17.3	20.2	21.0	22.1	31.2	33.4	34.2	31.9	36.9	37.6	37.2	28.3
1918	38.2	37.6	38.2	38.2	35.2	36.8	36.8	37.8	44.1	42.4	37.5	34.3	38.1
1919	35.3	32.6	27.7	28.9	30.1	32.4	32.2	30.7	29.0	30.5	32.1	32.0	31.1
1920	32.6	30.0	32.3	31.8	30.2	29.1	26.1	23.8	21.6	18.5	15.7	12.0	25.3
1921	11.9	10.6	9.2	9.4	9.8	9.2	9.3	10.5	16.0	16.9	15.3	15.4	12.0
1922	15.3	14.9	15.4	16.0	15.7	18.9	19.7	19.8	18.9	18.8	20.6	20.5	17.9
1923	21.9	22.2	21.7	20.7	19.4	20.8	20.2	19.6	21.8	22.0	25.9	27.7	22.0
1924	26.1	25.2	22.4	24.0	22.9	22.6	22.0	23.4	19.7	22.3	23.3	23.5	23.1
1925	22.6	23.5	23.2	22.2	21.2	21.6	22.0	21.5	22.0	19.9	18.1	16.8	21.2
1926	17.4	16.8	15.4	15.1	15.6	15.0	15.2	15.5	15.4	12.5	12.1	11.5	14.7

[1] International Yearbook of Agricultural Statistics, 1921, p. 443. London Economist, 1922 to date. Average of weekly quotations.

[2] London Economist, average of weekly quotations to August, 1925, inclusive. Subsequently from Liverpool Cotton Association Daily Report.

Table 254.—*Cotton; Average spot price per pound in specified foreign markets, 1912–1926*—Continued

ALEXANDRIA, EGYPT, EGYPTIAN UPPERS, GOOD [3]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Average 1921–1925	30. 2	29. 3	30. 0	30. 0	29. 9	30. 0	29. 7	28. 0	28. 0	29. 2	29. 9	------	------
1912	15. 8	16. 6	16. 8	17. 6	18. 1	18. 9	19. 4	18. 5	17. 2	15. 8	17. 0	18. 1	17. 5
1913	18. 6	18. 7	19. 0	19. 4	19. 0	18. 5	18. 2	17. 8	18. 5	18. 6	18. 6	18. 0	18. 6
1914	17. 4	17. 0	16. 4	17. 0	16. 8	16. 7	16. 3	(4)	(4)	9. 6	11. 2	10. 5	14. 9
1915	11. 1	11. 9	13. 0	14. 3	13. 2	13. 1	12. 5	12. 6	(4)	(4)	16. 2	(4)	13. 1
1916	19. 2	21. 1	21. 0	20. 3	20. 6	21. 4	20. 7	20. 6	23. 3	27. 5	34. 5	35. 4	23. 8
1917	35. 1	37. 3	39. 6	48. 7	49. 3	51. 7	60. 1	45. 1	29. 6	32. 4	35. 6	38. 5	49. 1
1918	37. 9	36. 6	38. 0	38. 3	36. 5	37. 6	40. 5	(4)	(4)	(4)	(4)	(4)	------
1919	(4)	(4)	(4)	(4)	(4)	(4)	(4)	47. 1	42. 6	45. 6	60. 5	71. 9	------
1920	85. 2	94. 6	87. 2	94. 0	82. 7	69. 8	61. 2	54. 9	41. [illegible]	32. 5	24. 2	19. 5	62. 3
1921	19. 9	15. 1	16. 3	16. 3	15. 3	14. 2	14. 9	14. 9	25. 7	30. 9	26. 0	27. 3	19. 8
1922	25. 3	23. 3	22. 9	22. 7	24. 7	26. 7	26. 1	25. 0	23. 3	24. 1	26. 7	27. 0	24. 1
1923	28. 8	30. 0	31. 3	30. 4	28. 2	30. 1	29. 4	29. 2	30. 0	30. 4	35. 8	38. 4	30. 9
1924	38. 8	37. 9	35. 2	39. 2	41. 8	39. 4	38. 4	36. 1	28. 5	29. 5	31. 4	34. 3	35. 1
1925	38. 1	40. 0	44. 2	41. 2	39. 7	39. 6	39. 8	34. 8	32. 3	31. 2	29. 6	27. 0	36. 5
1926	26. 0	25. 1	22. 6	22. 7	22. 8	22. 9	21. 9	22. 4	23. 4	18. 8	18. 4	17. 6	22. 0

Division of Statistical and Historical Research. Conversions at monthly average rates of exchange as quoted by International Institute of Agriculture Annual, 1921, and Federal Reserve Board.

[3] Monthly Agricultural Statistics, Ministry of Finance, Cairo, Egypt [4] No quotations.

Table 255.—*Cottonseed: Production, 1909–1926*

[Thousand short tons—i. e., 000 omitted]

Year beginning August—	Production	Year beginning August	Production	Year beginning August—	Production
1909	4, 462	1915	4, 992	1921	3, 531
1910	5, 175	1916	5, 113	1922	4, 336
1911	6, 997	1917	5, 040	1923	4, 502
1912	6, 104	1918	5, 360	1924	6, 051
1913	6, 305	1919	5, 074	1925	7, 150
1914	7, 186	1920	5, 971	1926 [1]	8, 267

Division of Crop and Livestock Estimates. Compiled from reports of the Bureau of the Census.

[1] Preliminary estimate by Department of Agriculture.

Table 256.—*Cottonseed: Production and farm value, by States, 1921–1926*

[In thousands—i. e., 000 omitted]

State	Production, year beginning August [1]—						Total value, year beginning August—					
	1921	1922	1923	1924	1925	1926 [2]	1921	1922	1923	1924	1925	1926 [3]
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Missouri	31	[4] 66	57	86	133	113	960	2, 420	3, 007	3, 440	4, 043	1, 898
Virginia	7	12	22	17	23	24	231	502	997	683	831	624
North Carolina	344	378	452	366	488	558	11, 228	15, 596	20, 150	13, 670	16, 885	12, 210
South Carolina	334	218	341	357	394	457	11, 503	9, 228	15, 485	13, 155	13, 384	9, 597
Georgia	349	317	261	445	516	655	11, 949	12, 528	12, 327	16, 518	17, 590	13, 755
Florida	5	12	6	10	17	15	156	384	250	357	537	285
Tennessee	134	174	101	157	229	211	4, 095	6, 683	4, 774	5, 831	6, 396	4, 009
Alabama	257	366	260	438	602	662	7, 877	13, 308	11, 963	15, 825	19, 077	12, 578
Mississippi	361	439	268	487	884	857	10, 835	14, 939	12, 537	17, 685	26, 821	17, 097
Arkansas	354	449	276	486	711	719	9, 969	14, 799	12, 230	16, 626	17, 796	12, 582
Louisiana	124	152	163	219	404	364	3, 415	4, 761	6, 621	6, 844	11, 874	6, 562
Oklahoma	214	279	291	671	751	866	5, 303	8, 783	11, 497	21, 499	21, 456	13, 836
Texas	978	1, 433	1, 927	2, 197	1, 849	2, 620	27, 452	45, 354	75, 326	70, 370	59, 113	45, 850
New Mexico	3	5	14	25	30	32	------	------	------	798	916	576
Arizona	20	21	34	48	53	51	------	466	------	1, 543	1, 465	918
California	15	12	24	35	54	57	------	------	708	1, 139	1, 827	1, 140
All other	1	3	4	6	11	9	1, 159	694	2, 238	204	370	182
United States	3, 531	4, 336	4, 502	6, 051	7, 150	8, 267	104, 032	150, 445	190, 110	206, 190	220, 381	154, 089

Division of Crop and Livestock Estimates.

[1] Compiled from reports of the Bureau of the Census.
[2] Preliminary estimate by Department of Agriculture.
[3] Value based on Dec. 1 price.
[4] Slight differences from census figures due to ginnings in one State of cotton grown in another.

TABLE 257.—*Cottonseed and cottonseed products: Production, 1909–1926*

[In thousands—i. e., 000 omitted]

Year ended July	Cottonseed crushed	Crude cottonseed products: Oil	Crude cottonseed products: Cake and meal	Crude cottonseed products: Hulls
	Short tons	*Gallons*	*Short tons*	*Short tons*
Average:				
1909–1913	4, 109	166, 632	1, 752	1, 415
1914–1920	4, 579	184, 375	2, 153	1, 220
1921–1925	3, 646	150, 026	1, 654	1, 082
1909	3, 670	146, 790	1, 492	1, 330
1910	3, 269	131, 000	1, 326	1, 189
1911	4, 106	167, 970	1, 792	1, 375
1912	4, 921	201, 650	2, 151	1, 642
1913	4, 580	185, 750	1, 999	1, 540
1914	4, 848	193, 330	2, 220	1, 400
1915	5, 780	229, 260	2, 648	1, 677
1916	4, 202	167, 110	1, 923	1, 220
1917	4, 479	187, 688	2, 225	969
1918	4, 252	174, 996	2, 068	996
1919	4, 479	176, 711	2, 170	1, 137
1920	4, 013	161, 529	1, 817	1, 143
1921	4, 069	174, 558	1, 786	1, 256
1922	3, 008	124, 063	1, 355	937
1923	3, 242	133, 723	1, 487	944
1924	3, 308	130, 616	1, 518	941
1925	4, 005	187, 171	2, 125	1, 331
1926 [1]	5, 558	215, 602	2, 597	1, 547

Division of Statistical and Historical Research. Compiled from reports of the Bureau of the Census.

[1] Preliminary.

TABLE 258.—*Cottonseed: Estimated price per ton, received by producers, United States, 1910–1926*

Year beginning August	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Weighted average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1910–1913	19. 57	20. 75	20. 91	20. 77	21. 81	21. 90	21. 95	22. 21	22. 70	22. 53	21. 94	21. 47	21. 10
1914–1920	43. 27	41. 94	46. 14	48. 12	47. 41	47. 11	47. 46	47. 20	47. 87	47. 82	46. 09	45. 96	45 70
1921–1925	33. 39	31. 73	33. 70	35. 29	36. 12	36. 57	36. 96	37. 61	39. 65	39. 35	37. 87	37. 03	34. 31
1910	- - -	26. 23	26. 86	25. 36	25 65	26. 35	25. 61	25 49	26. 12	25. 46	23 38	22. 70	25 82
1911	20. 46	18. 09	16. 73	16 69	16. 70	16. 57	16. 81	18. 21	18. 62	19. 21	19. 24	19 04	17. 08
1912	18. 02	17. 61	18. 04	18. 57	21. 42	21. 98	22 01	21. 55	21. 89	21. 88	21. 51	21. 37	19. 10
1913	20. 24	21. 07	22. 01	22. 46	23. 48	22. 70	23. 37	23. 60	24. 17	23. 56	23. 62	22. 78	22. 39
1914	20. 16	13. 88	15. 28	14. 01	17. 73	19 14	23. 33	22. 32	22. 69	22. 07	20 82	20 05	16. 50
1915	20. 14	20. 98	33. 73	34. 01	35. 54	36. 85	36. 75	36. 56	38. 13	37. 91	35. 79	36. 06	32. 65
1916	35. 22	41. 13	47. 19	55. 82	56. 35	52. 53	51. 43	53. 18	55. 94	55. 61	57. 19	56. 90	49. 13
1917	56. 61	57. 58	65. 02	69 38	68. 29	67. 51	66. 95	68. 27	68. 08	68. 16	66. 03	64. 11	66. 15
1918	61. 34	67. 90	65. 85	64. 97	65. 05	64. 93	64. 65	64 00	64. 28	63. 83	63. 80	64 24	65 23
1919	66. 23	62. 13	66. 95	72. 65	69. 07	69. 88	69. 34	67. 18	68. 71	69. 88	66. 16	61. 64	67. 27
1920	43. 22	29. 96	28. 94	26 00	19. 83	18. 96	19. 76	18. 92	17. 23	17. 28	17. 06	18 75	22 95
1921	22. 06	27. 19	31. 05	29. 15	28. 78	29. 24	30. 17	32. 72	40. 79	40. 21	37. 71	36. 92	29. 72
1922	32. 44	25. 37	31. 79	40 18	42. 93	43 35	45. 16	46. 32	47. 60	46. 58	43. 14	41. 42	34. 70
1923	37. 47	40. 88	40. 90	45 92	45. 54	44. 37	43. 27	41. 34	40. 42	40. 53	39. 96	39. 07	42. 23
1924	38. 44	31. 74	31. 95	33. 57	35. 48	37. 50	37. 14	38. 21	37. 94	38. 61	36. 66	36. 41	34 08
1925	36. 52	33. 48	32. 82	27. 64	27. 87	28. 40	29. 06	29. 47	31. 51	30. 84	31 89	31. 31	30. 82
1926	29. 73	27. 38	20. 06	18. 66	18. 05	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -

Division of Crop and Livestock Estimates.

TABLE 259.—*Cottonseed oil: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913		[illegible]		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Brazil	4,680	[1] 12	20	2,681	6	463	[2,3] 67	[2] 1,639
China	------	2,110	------	1,336	------	1,374	------	4,903
Egypt	1,927	3,568	21	25,198	34	16,025	391	8,101
Peru	------	[2,4] 158	------	5,243	------	1[illegible],083	------	7,309
United Kingdom	44,246	53,920	16,809	46,274	16,524	50,180	11,198	44,692
United States	[5] 4,715	292,257	25	49,608	------	43,343	------	62,415
PRINCIPAL IMPORTING COUNTRIES								
Algeria	2,728	1,177	7	16	85	17	[2] 3	[2] 46
Argentina	7,510	12	4,791	------	517	------	1,838	2
Australia	1,062	------	[4] 904	[6] 3	[6] 488	[6] 115	[2] 502	[2] 118
Belgium	16,884	8,143	2,387	8	2,166	(7)	2,689	------
Canada	21,131	------	25,613	------	20,495	------	30,136	------
Czechoslovakia	------	------	87	------	1,214	[2] 52	233	------
Denmark	[4] 7,081	------	3,813	1,856	3,466	1,180	4,732	[2] 287
France	24,666	2,509	6,404	374	7,225	92	8,596	38
Germany	51,884	------	9,307	------	14,204	------	30,652	38
Greece	------	------	198	[2] 2	1,785	------	------	------
Italy	34,498	6	19	1	36	(7)	105	2
Netherlands	40,141	392	23,464	5,809	21,162	5,604	22,643	5,015
Norway	11,284	------	4,695	3	5,552	------	5,102	------
Sweden	5,220	[5] 20	1,364	------	1,555	------	[2] 1,545	184
Uruguay	[2] 3,988	------	------	------	133	------	146	------
Other countries	54,075	2,841	10,272	345	12,296	287	8,502	224
Total	337,670	367,125	110,249	138,757	108,893	128,875	129,080	134,413

Division of Statistical and Historical Research. Official sources except where otherwise noted.

[1] One year only.
[2] International Yearbook of Agricultural Statistics.
[3] Seven months.
[4] Four-year average.
[5] Three-year average.
[6] Year beginning July 1.
[7] Less than 500 pounds.

TABLE 260.—*Cottonseed oil, crude: Average price per pound f. o. b. mills, 1909–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1909–1913	5.27	5.25	5.28	5.64	5.86	5.89	5.66	------	5.55	5.45	5.52	5.55	------
1914–1920	12.11	12.01	12.19	12.25	12.29	12.87	12.17	11.67	11.23	11.64	11.92	11.80	12.01
1921–1925	8.41	8.41	8.74	8.64	8.55	8.75	------	------	8.84	8.32	8.56	8.69	------
1909	4.43	4.44	4.36	4.45	4.65	4.68	4.65	6.01	4.82	5.63	5.97	6.32	4.95
1910	6.18	6.12	6.46	7.03	7.12	7.27	7.27	------	7.00	6.44	6.17	6.20	------
1911	6.14	5.80	5.55	5.20	5.43	5.47	4.88	4.27	4.80	4.38	4.40	4.15	5.04
1912	4.36	4.52	4.60	5.48	6.22	5.80	5.30	5.24	4.95	4.84	5.02	5.27	5.13
1913	5.22	5.30	5.44	6.03	5.87	6.23	6.20	6.10	6.18	5.94	6.06	5.83	5.87
1914	6.10	6.16	6.30	6.60	6.53	6.26	6.40	5.26	5.36	4.71	4.54	4.44	5.72
1915	5.15	5.81	6.00	5.60	5.16	5.09	4.83	4.40	5.41	6.67	6.64	7.31	5.07
1916	7.71	7.67	8.72	9.18	9.61	9.54	9.20	8.85	8.82	10.10	11.35	11.35	9.34
1917	11.10	11.20	11.64	13.20	14.10	14.67	14.00	13.92	13.86	15.93	17.40	17.33	14.03
1918	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50	17.50
1919	17.50	17.50	17.50	17.50	17.50	21.56	21.75	21.75	17.88	16.25	18.95	18.46	18.63
1920	19.74	18.25	17.69	16.19	15.62	15.50	11.50	10.00	10.25	10.35	7.08	6.19	13.20
1921	6.10	5.80	4.70	4.43	5.34	5.74	6.76	6.75	7.81	7.26	7.00	7.02	6.23
1922	7.16	8.28	10.15	9.80	10.00	9.75	8.88	8.50	6.46	7.34	8.30	8.52	8.60
1923	9.84	9.92	10.45	10.25	9.88	9.75	9.00	------	9.94	9.44	9.88	9.45	------
1924	9.46	8.84	8.46	8.74	8.20	8.78	10.06	11.30	8.34	9.03	8.85	9.69	9.15
1925	9.48	9.20	9.95	10.00	9.34	9.75	------	------	9.14	8.53	8.79	8.78	------
1926	9.75	10.71	11.00	11.22	12.17	------	------	10.88	8.19	7.44	6.64	6.36	------

Division of Statistical and Historical Research. 1909–1912, and 1919–1926 average of weel
1 the Oil, Paint and Drug Reporter. 1913–1918 from War Industries Board Price Bulletin

TABLE 261.—*Cottonseed oil, prime summer yellow: Average spot price per pound (barrels), New York, 1920–1926*

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Average 1921–1925	10.78	10.28	10.09	10.13	10.19	10.56	10.55	11.27	11.38	11.62	11.87	11.93	10.89
1920	12.82	13.48	11.43	10.14	8.91	8.59	7.34	6.26	6.24	7.22	7.46	8.57	9.00
1921	8.69	9.88	8.69	8.30	8.28	8.62	9.86	11.48	11.57	11.71	11.83	10.97	9.95
1922	9.96	8.54	8.88	9.51	9.81	10.77	10.90	11.78	11.76	11.60	11.48	10.35	10.44
1923	10.34	11.62	12.01	11.67	11.00	11.00	10.03	9.77	10.09	9.82	10.42	11.98	10.81
1924	13.83	10.54	11.00	10.86	11.41	11.10	10.69	11.10	11.08	10.51	10.75	11.38	11.19
1925	11.09	10.81	9.86	10.32	10.47	11.33	11.28	12.24	12.38	14.48	15.38	14.99	12.02
1926	12.99	11.42	8.82	8.20	8.22	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. 1920–21, from annual reports of the New York Produce Exchange; 1922 and subsequently, compiled from Oil, Paint and Drug Reporter, average of daily ranges. Data for 1890–1919 are available in 1924 Yearbook, p. 766, Table 323.

TABLE 262.—*Cottonseed meal, 41 per cent protein: Price per ton, Memphis, 1920–1926*

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls*	*Dolls.*	*Dolls.*
1920	------	------	------	36.30	30.80	30.20	29.20	27.00	------	29.00	32.80	35.00	------
1921	------	38.20	35.70	35.00	36.30	37.10	39.30	45.10	47.60	49.25	47.50	44.75	------
1922	35.30	34.30	40.25	46.00	45.40	45.75	45.00	43.60	43.10	42.40	40.80	41.40	41.94
1923	43.20	42.90	44.90	47.40	45.00	43.62	41.00	39.60	39.50	39.50	40.25	43.62	42.54
1924	43.60	41.38	40.75	38.75	39.25	37.70	35.75	35.88	36.81	38.35	38.81	41.50	39.04
1925	44.10	36.88	34.35	34.12	34.00	32.62	31.12	31.00	31.94	30.67	31.00	31.10	33.58
1926	32.12	28.88	23.90	23.67	24.50	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from reports of the Division of Hay, Feed, and Seed.

TABLE 263.—*Cottonseed meal, 36 per cent protein, bagged: Average price per ton at eight markets, 1926*

Market	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Atlanta	------	------	31.75	31.25	31.00	28.00	28.30	27.62	26.88	23.10	22.00	22.50
Boston	39.00	38.00	37.75	38.67	37.62	36.75	35.85	35.38	35.00	31.25	30.38	31.40
Buffalo	36.60	35.62	34.25	35.25	35.75	35.38	35.35	34.50	32.00	28.60	27.88	28.33
Chicago	35.80	34.62	34.25	35.12	35.15	35.00	34.45	33.38	32.00	27.65	27.75	27.42
Cincinnati	34.90	33.38	32.88	33.50	34.15	34.06	33.25	32.31	30.12	27.00	26.00	26.62
Minneapolis	37.20	35.62	34.88	35.12	35.50	35.38	36.50	34.12	34.00	29.00	28.38	28.70
Philadelphia	38.60	36.33	36.75	37.75	37.15	37.25	37.40	36.06	34.19	30.85	29.75	30.75
Pittsburgh	36.45	34.82	34.32	35.08	35.00	35.20	35.82	34.37	33.16	29.28	28.29	28.34

Division of Statistical and Historical Research. Compiled from reports of the Division of Hay, Feed, and Seed.

TABLE 264.—*Hay, tame: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage	Average yield per acre	Production	Price per ton received by producers Dec. 1	Farm value Dec. 1	Value per acre [1]	Chicago prices No. 1 timothy per ton by carload lots: December, Low	December, High	Following May, Low	Following May, High	Domestic exports, fiscal year beginning July [2]	Imports, fiscal year beginning July [2]
	1,000 acres	*Short tons*	*1,000 short tons*	*Dollars*	*1,000 dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Short tons*	*Short tons*
Average:												
1909–1913	49,756	1.35	67,097	12.12	813,534	16.35	15.90	18.80	[illegible].80	20.30	62,906	326,972
1914–1920	54,560	1.52	83,052	15.44	1,282,460	23.51	21.93	24.71	28.29	27.93	86,059	183,571
1921–1925	59,835	1.51	90,159	13.31	1,200,176	20.06	22.00	24.60	23.00	25.60	86,198	198,873
1909	*51,041*	1.46	74,384	10.58	786,722	15.41	16.00	17.00	12.50	16.00	61,608	108,448
1910	51,015	1.36	69,378	12.14	842,252	16.51	16.00	19.00	18.50	23.50	61,850	377,168
1911	48,240	1.14	54,916	14.29	784,926	16.27	20.00	22.00	24.00	28.00	66,898	782,884
1912	49,530	1.47	72,691	11.79	856,695	17.30	13.00	18.00	14.00	16.50	68,006	175,082
1913	48,954	1.31	64,116	12.43	797,077	16.28	14.50	18.00	15.00	17.50	56,169	191,280
1914	49,145	1.43	70,071	11.12	779,068	15.85	15.00	16.00	16.50	17.50	118,169	22,609
1915	51,108	1.68	85,920	10.63	913,644	17.88	14.50	16.50	17.50	20.00	199,736	48,366
1916	55,721	1.64	91,192	11.22	1,022,960	18.36	15.00	17.50	19.00	22.00	96,792	65,125
1917	55,203	1.51	83,308	17.09	1,423,766	25.79	26.00	28.00	20.00	26.00	33,762	460,027
1918	55,755	1.37	76,660	20.13	1,543,494	27.68	29.00	31.00	34.00	37.00	32,366	310,742
1919	56,888	1.53	86,997	20.05	1,744,547	30.67	28.00	32.00	35.00	50.00	67,142	251,946
1920	58,101	1.55	89,785	17.66	1,585,355	27.29	26.00	32.00	21.00	23.00	55,446	126,185
1921	58,769	1.40	82,458	12.10	998,069	16.98	20.00	24.00	26.00	28.00	61,240	5,357
1922	61,159	1.57	95,748	12.55	1,202,063	19.65	20.00	22.00	21.00	23.00	53,096	85,430
1923	59,868	1.49	89,250	14.13	1,261,486	21.07	25.00	27.00	25.00	29.00	23,516	403,478
1924	61,147	1.60	97,622	13.77	1,344,129	21.98	22.00	24.00	19.00	23.00	25,413	119,141
1925	58,231	1.47	85,717	13.94	1,195,133	20.52	23.00	26.00	24.00	25.00	17,726	430,958
1926 [3]	58,840	1.47	86,378	14.09	1,216,694	20.68	21.00	24.00				

Division of Crop and Livestock Estimates. Figures in italics are census returns.

[1] Based on farm price Dec. 1.
[2] Compiled from Commerce and Navigation of United States, 1909–1918, and June issues of Monthly Summaries of Foreign Commerce, 1919–1926.
[3] Preliminary.

TABLE 265.—*Hay, wild: Acreage, production, and December 1 price, United States, 1909–1926*

Year	Acreage	Yield per acre	Production	Price per ton received by producers Dec. 1	Year	Acreage	Yield per acre	Production	Price per ton received by producers Dec. 1
	1,000 acres	*Short tons*	*1,000 short tons*	*Dolls.*		*1,000 acres*	*Short tons*	*1,000 short tons*	*Dolls.*
1909	*17,187*	1.07	18,383		1918	15,365	0.94	14,479	15.23
1910	17,187	.77	13,151		1919	17,150	1.07	18,401	16.50
1911	17,187	.71	12,155		1920	15,787	1.11	17,460	11.35
1912	17,427	1.04	18,043		1921	15,632	.98	15,391	6.63
1913	16,341	.92	15,063		1922	15,871	1.02	16,131	7.14
1914	16,752	1.11	18,615	7.49	1923	15,556	1.12	17,361	7.88
1915	16,796	1.27	21,343	6.80	1924	15,205	.98	14,859	7.83
1916	16,635	1.19	19,800	7.90	1925	14,560	.87	12,724	8.53
1917	16,212	.93	15,131	13.49	1926 [1]	13,506	.74	9,984	10.07

Division of Crop and Livestock Estimates. Figures in italics are census returns.

[1] Preliminary.

Table 266.—*Hay, tame: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Tons*
Maine	1,246	1,275	1,208	1,272	1,594	1,420	1,531	1,428
New Hampshire	441	470	469	469	538	521	572	534
Vermont	918	935	924	926	1,285	1,405	1,449	1,461
Massachusetts	434	474	471	475	595	605	626	594
Rhode Island	45	47	46	45	56	60	59	58
Connecticut	320	359	357	363	421	454	459	424
New York	4,919	5,000	4,917	4,847	6,688	7,208	6,794	6,393
New Jersey	312	265	257	250	328	482	400	391
Pennsylvania	2,919	3,100	3,038	2,916	3,066	4,097	4,225	3,804
Ohio	3,250	3,331	3,030	2,936	3,913	5,308	3,304	4,007
Indiana	2,094	2,372	2,006	2,015	2,597	3,506	1,982	2,536
Illinois	3,280	3,518	3,099	3,206	4,265	5,259	3,378	3,665
Michigan	3,165	3,050	2,887	2,860	3,919	4,758	2,871	4,007
Wisconsin	3,187	3,317	3,362	3,368	4,243	6,383	5,486	5,742
Minnesota	2,016	2,230	2,258	2,091	2,522	3,792	3,989	2,741
Iowa	3,139	3,362	3,034	3,158	4,779	5,970	4,142	3,845
Missouri	3,310	3,596	3,272	3,147	4,048	5,002	3,622	3,569
North Dakota	895	939	1,066	1,331	1,237	1,499	1,821	1,365
South Dakota	1,050	1,102	1,095	1,361	1,847	1,819	1,452	1,364
Nebraska	1,584	1,751	1,672	1,761	3,824	4,012	3,625	3,283
Kansas	1,630	1,570	1,715	1,565	3,592	3,394	3,420	2,707
Delaware	81	76	75	76	95	116	108	112
Maryland	386	426	416	396	405	752	577	516
Virginia	1,019	1,536	1,020	979	1,019	1,406	779	992
West Virginia	753	791	836	771	895	1,208	1,005	1,015
North Carolina	784	695	710	758	965	678	481	686
South Carolina	434	333	214	260	348	187	57	202
Georgia	772	763	506	522	507	392	169	400
Florida	132	88	78	70	119	69	54	51
Kentucky	1,130	1,120	1,009	1,156	1,541	1,590	1,155	1,526
Tennessee	1,354	1,372	1,162	1,297	1,554	1,425	1,069	1,634
Alabama	789	625	556	581	634	401	375	554
Mississippi	471	361	393	425	590	340	393	499
Arkansas	576	603	582	607	727	846	464	699
Louisiana	214	264	254	262	308	192	228	305
Oklahoma	936	545	480	551	1,600	859	613	851
Texas	723	828	804	891	1,183	948	749	1,249
Montana	1,150	1,206	1,232	1,239	2,162	2,102	2,046	1,968
Idaho	1,060	1,073	1,032	1,025	2,649	2,329	3,385	2,768
Wyoming	730	646	663	682	1,409	1,166	1,283	1,326
Colorado	1,203	1,263	1,245	1,258	2,463	2,661	2,676	2,905
New Mexico	158	174	171	182	331	396	387	435
Arizona	162	158	160	176	577	583	555	641
Utah	523	537	568	562	1,405	1,056	1,874	1,722
Nevada	180	205	213	209	480	359	652	520
Washington	1,005	970	908	923	2,365	1,795	2,048	2,055
Oregon	984	953	925	912	2,207	1,391	1,903	1,704
California	2,066	1,874	1,777	1,699	5,265	4,642	5,417	4,984
United States	59,868	61,147	58,231	58,840	89,250	97,622	85,717	86,378

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 267.—*Hay, wild: Acreage and production, by States, 1923–1926*

[In thousands—i. e., 000 omitted]

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*Tons*	*Tons*	*Tons*	*Tons*
Maine	16	13	13	13	18	12	12	12
New Hampshire	12	17	17	17	11	16	14	15
Vermont	13	13	13	13	13	13	14	14
Massachusetts	12	13	13	13	12	13	13	12
Rhode Island	1	2	2	2	1	2	2	2
Connecticut	9	11	11	11	11	12	12	11
New York	67	67	68	68	79	86	76	76
New Jersey	22	16	16	16	26	[illegible]	26	25
Pennsylvania	25	20	20	20	29	27	25	25
Ohio	2	8	7	5	2	9	8	6
Indiana	24	21	21	21	28	21	19	24
Illinois	61	41	37	37	70	55	37	41
Michigan	52	41	45	38	62	51	44	44
Wisconsin	368	197	256	228	478	256	333	301
Minnesota	2,041	2,068	1,865	1,865	2,347	2,420	2,238	1,492
Iowa	401	318	311	315	481	401	305	265
Missouri	125	151	159	130	138	184	137	117
North Dakota	2,222	1,975	1,481	1,259	2,222	1,876	1,407	818
South Dakota	3,491	2,941	3,087	2,315	4,189	2,206	1,914	926
Nebraska	2,296	3,100	2,976	2,916	2,526	3,100	2,232	1,895
Kansas	892	901	938	982	1,053	1,120	788	640
Delaware	2	4	4	4	3	6	6	6
Maryland	4	5	4	4	5	7	4	5
Virginia	14	17	13	26	14	21	8	26
West Virginia	11	13	13	13	11	13	17	14
North Carolina	100	60	60	58	100	60	37	52
South Carolina	6	4	4	3	5	2	1	2
Georgia	16	20	12	18	14	12	6	14
Florida	6	4	4	4	5	3	3	4
Kentucky	23	23	23	23	23	28	24	29
Tennessee	55	50	35	56	60	50	23	62
Alabama	25	22	22	22	20	11	14	18
Mississippi	43	38	32	35	52	23	24	33
Arkansas	126	150	127	115	152	112	89	115
Louisiana	18	18	18	18	22	18	13	20
Oklahoma	520	530	424	509	510	583	280	407
Texas	207	215	211	231	228	215	95	277
Montana	653	673	650	645	594	606	585	516
Idaho	132	100	101	101	158	75	152	121
Wyoming	315	380	380	372	331	342	399	372
Colorado	373	360	360	360	392	360	360	360
New Mexico	40	32	35	30	32	26	23	33
Arizona	12	4	5	5	15	2	4	6
Utah	117	70	77	75	178	74	131	94
Nevada	181	128	177	160	197	108	230	160
Washington	27	27	30	30	43	27	46	42
Oregon	226	120	235	235	249	90	282	270
California	152	114	148	150	152	84	207	165
United States	15,556	15,205	14,560	13,506	17,361	14,859	12,724	9,984

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 268.—*Hay, tame: Yield in short tons per acre, by States, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
Me.	1.13	0.81	1.25	1.28	1.11	1.21	1.12	N. C.	1.05	1.19	1.20	1.22	.98	.68	.91
N. H.	1.15	.96	1.23	1.22	1.11	1.22	1.14	S. C.	.69	.83	.99	.80	.56	.27	.78
Vt.	1.38	1.03	1.39	1.40	1.50	1.57	1.58	Ga.	.65	.89	.84	.66	.51	.33	.76
Mass.	1.31	1.26	1.32	1.37	1.28	1.33	1.25	Fla.	.82	1.04	.71	.90	.78	.69	.73
R. I.	1.28	1.29	1.29	1.24	1.28	1.28	1.29	Ky.	1.28	1.10	1.38	1.36	1.42	1.14	1.32
Conn.	1.30	1.28	1.35	1.32	1.26	1.29	1.17	Tenn.	1.12	1.16	1.33	1.15	1.04	.92	1.26
N. Y.	1.32	1.01	1.40	1.36	1.45	1.38	1.32	Ala.	.79	.91	.95	.80	.64	.67	.95
N. J.	1.47	1.33	1.61	1.05	1.82	1.56	1.56	Miss.	1.11	1.14	1.22	1.25	.94	1.00	1.17
Pa.	1.36	1.20	1.57	1.05	1.61	1.39	1.30	Ark.	1.13	1.26	1.25	1.26	1.07	.80	1.15
Ohio.	1.33	1.27	1.50	1.20	1.59	1.09	1.36	La.	1.14	1.29	1.33	1.44	.73	.90	1.16
Ind.	1.23	1.09	1.37	1.24	1.48	.99	1.26	Okla.	1.57	1.62	1.67	1.71	1.58	1.28	1.54
Ill.	1.30	1.18	1.45	1.30	1.49	1.09	1.14	Tex.	1.33	1.40	1.50	1.64	1.14	.93	1.39
Mich.	1.25	1.00	1.45	1.26	1.56	.99	1.43	Mont.	1.79	1.79	1.89	1.88	1.74	1.66	1.59
Wis.	1.58	1.35	1.70	1.33	1.87	1.63	1.70	Idaho.	2.66	2.83	2.52	2.50	2.17	3.28	2.70
Minn.	1.55	1.56	1.58	1.25	1.61	1.77	1.31	Wyo.	1.85	1.89	1.90	1.93	1.80	1.81	1.94
Iowa.	1.52	1.48	1.47	1.52	1.78	1.37	1.22	Colo.	2.08	2.16	1.91	2.05	2.11	2.15	2.31
Mo.	1.20	1.20	1.10	1.22	1.39	1.11	1.13	N. Mex.	2.14	2.29	1.80	2.09	2.28	2.26	2.39
N. Dak.	1.55	1.86	1.57	1.49	1.00	1.71	1.03	Ariz.	3.42	3.09	3.29	3.56	3.69	3.47	3.64
S. Dak.	1.63	1.60	1.81	1.76	1.65	1.33	1.00	Utah.	2.66	2.53	2.75	2.69	2.02	3.30	3.06
Nebr.	2.20	2.17	1.95	2.41	2.29	2.17	1.86	Nev.	2.60	2.70	2.82	2.67	1.75	3.06	2.49
Kans.	2.06	1.78	2.15	2.20	2.16	1.99	1.73	Wash.	2.13	2.22	1.98	2.35	1.85	2.26	2.23
Del.	1.37	1.22	1.51	1.17	1.53	1.41	1.47	Oreg.	1.97	2.10	2.00	2.24	1.46	2.06	1.93
Md.	1.42	1.28	1.62	1.05	1.77	1.39	1.30	Calif.	2.55	2.33	2.47	2.55	2.35	3.05	2.93
Va.	1.07	.98	1.26	1.00	1.36	.76	1.01								
W. Va.	1.29	1.21	1.34	1.19	1.52	1.20	1.32	U. S.	1.51	1.40	1.57	1.49	1.60	1.47	1.47

Division of Crop and Livestock Estimates.

TABLE 269.—*Hay, wild: Yield in short tons per acre, by States, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
Me.	0.99	0.86	1.10	1.10	0.96	0.94	0.94	N. C.	.92	1.00	1.00	1.00	1.00	.62	.90
N. H.	.91	.80	1.00	.94	.95	.85	.90	S. C.	.72	.81	1.00	.85	.60	.33	.65
Vt.	1.03	1.00	1.10	1.00	1.00	1.05	1.05	Ga.	.79	1.00	.92	.90	.60	.51	.80
Mass.	1.00	1.00	1.00	1.00	1.00	1.00	.95	Fla.	.84	.90	.90	.85	.80	.75	.95
R. I.	.89	.88	.90	.95	.85	.85	1.00	Ky.	1.06	.90	1.15	1.00	1.20	1.05	1.25
Conn.	1.08	1.10	1.00	1.20	1.07	1.05	1.00	Tenn.	1.00	1.15	1.10	1.10	1.00	.65	1.10
N. Y.	1.15	1.00	1.18	1.18	1.28	1.12	1.12	Ala.	.72	.90	.80	.80	.50	.62	.84
N. J.	1.35	1.23	1.40	1.20	1.30	1.60	1.55	Miss.	.93	1.00	1.10	1.20	.60	.75	.95
Pa.	1.23	1.20	1.20	1.15	1.35	1.24	1.25	Ark.	.94	1.05	1.00	1.21	.75	.70	1.00
Ohio.	1.27	1.40	1.50	1.15	1.14	1.14	1.22	La.	1.12	1.30	1.40	1.20	1.00	.70	1.10
Ind.	1.05	1.07	1.14	1.15	1.00	.90	1.15	Okla.	.93	1.00	.90	.98	1.10	.66	.80
Ill.	1.19	1.20	1.25	1.15	1.35	1.00	1.10	Tex.	.95	1.10	1.10	1.10	1.00	.45	1.20
Mich.	1.16	1.10	1.30	1.20	1.25	.97	1.17	Mont.	.88	.80	.90	.91	.90	.90	.80
Wis.	1.28	1.20	1.30	1.30	1.30	1.30	1.32	Idaho.	1.23	1.50	1.20	1.20	.75	1.50	1.20
Minn.	1.20	1.28	1.22	1.15	1.17	1.20	.80	Wyo.	.95	.80	.95	1.05	.90	1.05	1.00
Iowa.	1.15	1.16	1.14	1.20	1.26	.98	.84	Colo.	1.00	1.00	.97	1.05	1.00	1.00	1.00
Mo.	1.05	1.10	.95	1.10	1.22	.86	.90	N. Mex.	.81	.85	.80	.80	.80	.80	1.10
N. Dak.	.99	1.00	1.05	1.00	.95	.95	.65	Ariz.	.80	1.00	.50	1.25	.50	.75	1.20
S. Dak.	.85	.80	.90	1.20	.75	.62	.40	Utah.	1.35	1.10	1.38	1.52	1.06	1.70	1.25
Nebr.	.91	.84	.85	1.10	1.00	.75	.65	Nev.	1.19	1.11	1.59	1.09	.84	1.30	1.00
Kans.	1.07	1.09	1.10	1.18	1.13	.84	.71	Wash.	1.35	1.50	1.14	1.58	1.00	1.55	1.40
Del.	1.27	.87	1.24	1.36	1.40	1.50	1.50	Oreg.	1.03	1.10	1.00	1.10	.75	1.20	1.15
Md.	1.19	1.20	1.12	1.15	1.40	1.10	1.21	Calif.	1.07	1.10	1.10	1.00	.74	1.40	1.10
Va.	.93	.75	1.00	1.00	1.25	.65	1.00								
W. Va.	1.12	1.10	1.20	1.00	1.00	1.30	1.10	U. S.	.99	.98	1.02	1.12	.98	.87	.74

Division of Crop and Livestock Estimates.

TABLE 270.—*Hay, alfalfa: Acreage, yield per acre, and production, by States, 1925 and 1926*

State	Acreage		Yield per acre		Production	
	1925	1926 [1]	1925	1926	1925	1926 [1]
	1,000 acres	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*
Me	2	2	3.00	3.00	6	6
N. H	1	2	3.00	2.70	3	5
Vt	5	6	3.00	3.10	15	19
Mass	1	2	3.10	3.15	3	6
Conn	3	4	3.10	2.75	9	11
N. Y	210	218	2.58	2.20	542	480
N. J	24	25	2.70	2.70	65	68
Pa	73	73	2.40	2.43	175	177
Ohio	167	192	2.30	2.45	384	470
Ind	140	175	2.13	2.11	298	369
Ill	248	260	2.60	2.27	645	590
Mich	399	479	2.05	2.25	818	1,078
Wis	310	341	2.65	2.60	822	887
Minn	308	370	2.75	2.08	847	770
Iowa	245	262	2.41	2.45	590	642
Mo	181	190	2.45	2.32	443	441
N. Dak	151	143	2.25	1.50	340	214
S. Dak	725	667	1.43	1.22	1,037	814
Nebr	1,300	1,258	2.32	2.04	3,016	2,566
Kans	902	893	2.28	2.00	2,057	1,786
Del	4	5	2.70	2.60	11	13
Md	19	21	2.40	2.35	46	49
Va	40	46	1.53	2.00	61	92
W. Va	8	8	2.00	2.20	16	18
N. C	5	5	1.05	1.90	5	10
S. C	3	4	.55	1.50	2	6
Ga	4	4	.48	1.40	2	6
Ky	51	54	2.25	2.50	115	135
Tenn	15	18	1.50	1.75	22	32
Ala	14	15	1.20	1.50	17	22
Miss	18	18	1.55	1.88	28	34
Ark	43	54	[illegible]	2.00	77	108
La	10	12	[illegible]	2.00	16	24
Okla	204	228	1.50	1.90	306	433
Tex	71	75	1.80	2.20	128	165
Mont	604	610	2.00	1.95	1,208	1,190
Idaho	709	674	3.80	3.20	2,694	2,157
Wyo	400	408	2.20	2.20	880	898
Colo	870	879	2.30	2.60	2,001	2,285
N. Mex	116	121	2.70	2.75	313	333
Ariz	128	134	4.00	4.30	512	576
Utah	495	495	3.50	3.25	1,732	1,609
Nev	148	145	3.60	3.00	533	435
Wash	273	259	3.00	3.30	819	855
Oreg	234	222	3.00	3.10	702	688
Calif	971	981	4.20	4.00	4,078	3,[illegible]
U. S	10,852	11,057	2.62	2.49	28,439	27,496

Division of Crops and Livestock Estimates.

[1] Preliminary.

TABLE 271.—*Hay, clover: Acreage, yield per acre, and production, by States, 1925 and 1926*

State	Acreage		Yield per acre		Production	
	1925	1926 [1]	1925	1926	1925	1926 [1]
	1,000 acres	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*
Me	34	85	1.70	1.70	58	60
N. H	9	9	1.80	1.70	16	15
Vt	25	25	1.90	2.00	48	50
Mass	17	17	2.00	1.90	34	32
R. I	1	1	1.90	2.00	2	2
Conn	15	15	2.05	1.90	31	28
N. Y	459	454	1.62	1.45	744	658
N. J	13	12	1.60	1.58	21	19
Pa	325	309	1.58	1.23	514	380
Ohio	583	556	1.14	1.26	665	701
Ind	614	428	.94	1.02	577	437
Ill	658	489	1.10	1.10	724	538
Mich	630	598	.95	1.30	598	777
Wis	783	775	1.75	1.90	1,370	1,472
Minn	580	498	1.90	1.38	1,102	687
Iowa	630	562	1.35	1.30	850	731
Mo	698	642	1.20	1.21	838	777
N. Dak	223	189	2.00	1.30	446	246
S. Dak	130	91	1.25	.90	162	82
Nebr	116	164	1.65	1.56	191	256
Kans	228	254	1.70	1.56	387	396
Del	15	14	1.40	1.50	21	21
Md	84	76	1.31	1.09	110	83
Va	160	93	.82	.90	131	84
W. Va	51	46	1.40	1.65	71	76
N. C	114	91	.70	1.00	80	91
S. C	2	4	.25	.80	1	3
Ga	5	4	.42	.92	2	4
Fla	1	1	.60	1.00	1	1
Ky	137	123	1.20	1.40	165	172
Tenn	234	211	.90	1.30	211	274
Ala	22	25	.73	1.10	16	28
Miss	98	98	.95	1.18	93	116
Ark	90	88	.75	.94	68	83
La	40	42	.70	1.00	28	42
Okla	10	21	1.00	1.40	10	29
Mont	55	52	1.70	1.90	94	99
Idaho	42	55	2.60	2.40	109	132
Wyo	18	25	1.90	1.60	34	40
Colo	20	22	1.90	2.20	38	48
N. Mex	2	2	1.70	2.00	3	4
Utah	3	3	2.50	2.40	8	7
Nev	2	2	2.50	2.00	5	4
Wash	70	74	2.40	2.50	168	185
Oreg	96	99	2.10	2.04	202	202
Calif	8	8	1.65	1.60	13	13
U. S	8,150	7,402	1.36	1.38	11,060	10,185

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 272.—*Hay, clover, and timothy (mixed): Acreage, yield per acre, and production, by States, 1925 and 1926*

State	Acreage		Yield per acre		Production	
	1925	1926 [1]	1925	1926	1925	1926 [1]
	1,000 acres	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*
Me	546	547	1.40	1.30	764	711
N. H	157	157	1.50	1.40	236	220
Vt	535	535	1.65	1.70	883	910
Mass	127	128	1.65	1.52	210	195
R. I	14	14	1.60	1.65	22	23
Conn	64	65	1.65	.45	106	94
N. Y	2,227	2,205	1.40	1.36	3,118	2,999
N. J	130	125	1.50	1.45	195	181
Pa	1,563	1,480	1.39	1.30	2,173	1,924
Ohio	1,139	1,087	1.05	1.28	1,196	1,391
Ind	670	490	.86	1.26	576	617
Ill	687	611	1.00	1.20	687	733
Mich	1,410	1,340	.80	1.25	1,128	1,675
Wis	1,727	1,710	1.50	1.55	2,590	1,650
Minn	867	737	1.58	1.00	1,370	737
Iowa	1,493	1,525	1.27	1.00	1,898	1,525
Mo	1,021	939	1.00	1.00	1,021	939
N. Dak	32	27	1.75	.96	56	26
S. Dak	60	42	1.15	.62	69	26
Nebr	50	56	1.34	1.13	67	63
Kans	98	88	1.40	1.23	137	108
Del	31	31	1.30	1.25	40	39
Md	194	175	1.24	1.06	241	189

State	Acreage		Yield per acre		Production	
	1925	1926 [1]	1925	1926	1925	1926 [1]
	1,000 acres	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*
Va	285	239	.75	.95	214	227
W. Va	343	312	1.20	1.35	412	421
N. C	49	39	.70	1.05	34	41
Ga	2	2	.42	.92	1	2
Ky	182	164	1.20	1.33	218	218
Tenn	212	151	.85	1.40	180	211
Ala	3	-------	1.00	-------	3	-------
Miss	2	2	1.10	1.15	2	2
Ark	76	70	.75	1.20	57	84
Okla	7	11	1.10	1.35	8	15
Mont	157	159	1.70	1.48	267	235
Idaho	93	102	2.50	2.00	232	204
Wyo	73	71	2.00	2.00	146	142
Colo	126	121	2.00	1.90	252	230
N. Mex	4	4	1.40	2.00	6	8
Utah	21	19	2.30	2.10	48	40
Nev	13	13	2.00	1.50	26	20
Wash	100	105	2.25	2.50	225	262
Oreg	70	71	1.70	2.00	119	142
Calif	20	20	1.70	1.60	34	32
U. S	16,680	15,789	1.27	1.30	21,267	20,511

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 273.—*Hay, timothy: Acreage, yield per acre, and production, by States, 1925 and 1926*

State	Acreage		Yield per acre		Production	
	1925	1926 [1]	1925	1926	1925	1926 [1]
	1,000 acres	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*
Me	137	138	1.30	1.19	178	164
N. H	45	45	1.45	1.30	65	58
Vt	137	137	1.50	1.55	206	212
Mass	57	57	1.55	1.46	88	83
R. I	4	4	1.45	1.45	6	6
Conn	35	38	1.57	1.40	55	53
N. Y	1,244	1,207	1.27	1.24	1,580	1,497
N. J	60	59	1.35	1.35	81	80
Pa	932	904	1.28	1.26	1,193	1,139
Ohio	1,036	989	.88	1.30	912	1,286
Ind	370	653	.73	1.24	270	810
Ill	771	783	.78	1.05	601	822
Mich	359	341	.67	1.15	241	392
Wis	430	426	1.30	1.30	559	554
Minn	335	285	1.35	.90	452	256
Iowa	524	600	1.03	.88	540	528
Mo	1,029	947	.83	.89	854	843
N. Dak	72	61	1.25	.75	90	46
S. Dak	54	38	.90	.52	49	20
Nebr	15	16	1.14	1.00	17	16
Kans	72	71	1.26	1.05	91	75
Del	11	11	1.15	1.26	13	14
Md	66	63	1.23	1.12	81	71

State	Acreage		Yield per acre		Production	
	1925	1926 [1]	1925	1926	1925	1926 [1]
	1,000 acres	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*
Va	117	167	.75	.85	88	142
W. Va	224	204	1.12	1.20	251	245
N. C	26	21	.64	.90	17	19
S. C	2	4	.25	.80	1	3
Ga	4	2	.42	.92	2	2
Ky	201	181	1.00	1.25	201	226
Tenn	68	75	.82	1.35	57	101
Ala	2	-------	1.00	-------	2	-------
Miss	4	4	1.00	1.10	4	4
Ark	29	26	.75	1.10	22	29
Okla	8	13	1.25	1.50	10	20
Mont	100	101	1.40	1.05	140	106
Idaho	54	58	1.90	1.40	103	81
Wyo	30	28	1.60	1.60	48	45
Colo	30	32	1.80	1.80	54	58
N. Mex	5	5	1.40	1.90	7	10
Utah	8	7	2.15	2.00	17	14
Nev	8	8	2.00	1.50	16	12
Wash	51	54	2.00	1.80	102	97
Oreg	17	17	2.00	1.62	34	28
Calif	4	4	1.60	1.60	6	6
U. S	8,787	8,884	1.07	1.16	9,404	10,273

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 274.—*Hay, grains cut green: Acreage, yield per acre, and production, by States, 1925 and 1926*

State	Acreage		Yield per acre		Production		State	Acreage		Yield per acre		Production	
	1925	1926 [1]	1925	1926	1925	1926 [1]		1925	1926 [1]	1925	1926	1925	1926 [1]
	1,000 acres	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*		*1,000 acres*	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*
Me	4	4	1.85	1.85	7	7	N. C	89	93	0.75	0.83	67	77
N. H	6	6	2.25	1.90	14	11	S. C	21	25	.48	.90	10	22
Vt	19	19	2.25	2.20	43	42	Ga	45	38	.40	.82	18	31
Mass	8	9	2.15	1.80	17	16	Fla	1	1	.90	.70	1	1
R. I	1	1	1.85	1.90	2	2	Ky	35	37	1.20	1.20	42	44
Conn	6	7	2.00	1.90	12	13	Tenn	60	84	1.00	1.20	60	101
N. Y	29	30	2.00	1.69	58	51	Ala	30	33	.60	.78	18	26
N. J	3	3	1.75	1.70	5	5	Miss	12	9	.88	1.10	11	10
Pa	9	10	1.80	1.85	16	18	Ark	45	49	.68	.75	31	37
Ohio	18	19	1.30	1.40	23	27	Okla	38	31	.78	1.00	30	31
Ind	35	38	1.11	1.00	39	38	Tex	65	79	.45	1.20	29	95
Ill	26	31	1.09	1.01	28	31	Mont	211	212	1.10	1.00	232	212
Mich	22	31	1.15	1.45	25	45	Idaho	98	102	1.90	1.50	186	153
Wis	21	24	1.60	1.60	34	38	Wyo	62	70	1.40	1.50	87	105
Minn	39	51	1.70	1.30	66	66							
							Colo	90	94	1.40	1.50	126	141
Iowa	47	39	1.40	1.25	66	49	N.-Mex	17	20	1.20	1.75	20	35
Mo	64	86	1.28	1.05	82	90	Ariz	20	20	1.50	1.70	30	34
N. Dak	315	693	1.65	.90	520	624	Utah	6	6	1.80	1.50	11	9
S. Dak	55	456	.90	.75	50	342							
Nebr	34	102	1.40	1.31	48	134	Nev	1	1	1.50	1.20	2	1
							Wash	357	371	1.80	1.50	643	556
Kans	84	67	1.50	1.15	126	77	Oreg	415	410	1.70	1.40	706	574
Del	2	3	1.90	1.60	4	5	Calif	694	616	1.60	1.40	1,110	862
Md	6	5	1.57	1.50	9	8							
Va	26	23	1.15	1.00	30	23	U. S	3,309	4,172	1.46	1.18	4,821	4,942
W. Va	18	14	1.50	1.65	27	23							

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 275.—*Hay, annual legumes: Acreage, yield per acre, and production, by States, 1925 and 1926*

State	Acreage		Yield per acre		Production		State	Acreage		Yield per acre		Production	
	1925	1926 [1]	1925	1926	1925	1926 [1]		1925	1926 [1]	1925	1926	1925	1926 [1]
	1,000 acres	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*		*1,000 acres*	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*
N. Y	4	4	2.00	2.12	8	8	W. Va	31	42	1.91	1.90	59	80
N. J	2	2	1.60	2.15	3	4	N. C	318	389	.64	.87	202	346
Pa	6	10	1.80	1.65	11	16	S. C	148	166	.22	.73	33	122
Ohio	44	48	1.70	1.70	75	82	Ga	378	370	.32	.65	121	239
Ind	123	185	1.39	1.20	171	222	Fla	51	40	.65	.70	33	28
Ill	252	301	1.30	1.29	327	388	Ky	80	113	1.45	1.70	116	193
Mich	13	10	1.62	1.40	21	14	Tenn	233	316	1.04	1.22	243	385
Wis	15	14	1.80	1.68	27	24	Ala	335	343	.57	.83	191	285
Iowa	20	20	2.00	2.00	40	40	Miss	136	157	.97	1.08	132	170
Mo	120	168	1.54	1.60	185	269	Ark	127	148	.74	1.00	94	148
Nebr	6	7	1.40	1.40	8	10	La	144	142	.90	1.04	129	147
Kans	6	7	1.50	1.57	9	11	Okla	33	31	.85	1.00	28	31
Del	10	10	1.40	1.70	14	17	Tex	96	108	.47	.94	45	101
Md	43	51	2.00	2.16	86	110							
Va	280	288	.65	1.09	182	313	U. S	3,053	3,490	.85	1.09	2,593	3,797

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 276.—*Hay, millet, Sudan grass, and other: Acreage, yield per acre, and production, by States, 1925 and 1926*

State	Acreage		Yield per acre		Production		State	Acreage		Yield per acre		Production	
	1925	1926[1]	1925	1926[1]	1925	1926[1]		1925	1926[1]	1925	1926[1]	1925	1926[1]
	1,000 acres	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*		*1,000 acres*	*1,000 acres*	*Tons*	*Tons*	*1,000 tons*	*1,000 tons*
Me	545	546	0.95	0.88	518	480	N. C	109	120	.70	.90	76	108
N. H	251	250	.95	.90	238	225	S. C	38	57	.26	.80	10	46
Vt	203	204	1.25	1.12	254	228	Ga	68	102	.34	1.14	23	116
Mass	261	262	1.05	1.00	274	262	Fla	25	28	.76	.75	19	21
R. I	26	25	1.02	1.00	27	25	Ky	323	484	.92	1.11	298	538
Conn	234	234	1.05	.96	246	225	Tenn	340	442	.87	1.20	296	530
N. Y	744	729	1.00	.96	744	700	Ala	150	165	.85	1.17	128	193
N. J	25	24	1.20	1.40	30	34	Miss	123	137	1.00	1.19	123	163
Pa	130	130	1.10	1.15	143	150	Ark	172	172	.67	1.22	115	210
Ohio	43	45	1.15	1.10	49	50	La	60	66	.92	1.40	55	92
Ind	53	46	.97	.94	51	43	Okla	180	216	1.23	1.35	221	292
Ill	457	731	.80	.77	366	563	Tex	573	629	.95	1.40	547	879
Mich	54	70	.75	1.65	40	116	Mont	105	105	1.00	1.20	105	126
Wis	76	78	1.10	1.50	84	117	Idaho	36	34	1.70	1.20	61	41
Minn	129	150	1.18	1.50	152	225	Wyo	80	80	1.10	1.20	88	96
Iowa	75	150	2.10	2.20	158	330	Colo	109	110	1.88	1.30	205	143
Mo	159	175	1.25	1.20	199	210	N. Mex	27	30	1.40	1.50	38	45
N. Dak	273	218	1.35	.96	369	209	Ariz	12	22	1.10	1.40	13	31
S. Dak	71	67	1.20	1.20	85	80	Utah	35	32	1.65	1.35	58	43
Nebr	151	158	1.91	1.51	288	238							
							Nev	41	40	1.70	1.20	70	48
Kans	325	185	1.89	1.37	613	254	Wash	57	60	1.60	1.67	91	100
Del	2	2	1.30	1.50	3	3	Oreg	93	93	1.50	1.40	140	130
Md	4	5	1.08	1.10	4	6	Calif	80	70	2.20	2.10	176	147
Va	112	123	.65	.90	73	111							
W. Va	161	145	1.05	1.05	169	152	U. S	7,400	8,046	1.10	1.14	8,133	9,174

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 277.—*Hay, all: United States, stocks on farms, May 1, 1910–1926*

Year	Production of all hay preceding year	Per cent on farms May 1	On farms May 1	Price per ton May 1	Year	Production of all hay preceding year	Per cent on farms May 1	On farms May 1	Price per ton May 1
	Short tons	*Per cent*	*Short tons*	*Dolls.*		*Short tons*	*Per cent*	*Short tons*	*Dolls.*
1910	92,767,000	11.6	10,745,000	11.08	1919	91,139,000	9.4	8,559,000	22.31
1911	82,529,000	12.4	10,222,000	11.69	1920	105,398,000	10.2	10,707,000	24.22
1912	67,071,000	8.5	5,732,000	16.31	1921	107,245,000	17.9	19,160,000	13.08
1913	90,734,000	14.9	13,523,000	10.42	1922	97,849,000	11.2	10,969,000	12.98
1914	79,179,000	12.2	9,631,000	11.63	1923	111,879,000	12.0	13,379,000	12.69
1915	88,686,000	12.2	10,797,000	11.03	1924	106,611,000	12.0	12,835,000	13.69
1916	107,263,000	13.5	14,452,000	11.27	1925	112,481,000	13.9	15,645,000	12.32
1917	110,992,000	11.4	12,659,000	13.94	1926	98,441,000	11.7	11,481,000	12.95
1918	98,439,000	11.7	11,476,000	17.97					

Division of Crop and Livestock Estimates.

TABLE 278.—*Hay: Receipts at 12 markets, 1910–1926*

Year beginning July	Baltimore	Boston	Chicago	Kansas City	Milwaukee	Minneapolis	New York	Peoria	Philadelphia	Pittsburgh	St. Louis	San Francisco	Total
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Average:													
1914–1920	44, 904	91, 234	264, 403	414, 146	26, 052	34, 249	225, 069	37, 696	60, 941	81, 708	235, 012	104, 108	1, 619, 581
1921–1925	17, 120	45, 262	152, 913	268, 873	15, 604	27, 347	80, 983	27, 260	41, 617	-------	-------	-------	--------
1910	68, 589	162, 420	273, 983	308, 940	38, 313	66, 306	336, 471	37, 419	86, 851	119, 685	253, 540	184, 594	1, 937, 111
1911	69, 284	164, 196	351, 630	318, 948	44, 199	63, 570	286, 474	41, 822	96, 484	115, 608	256, 462	147, 483	1, 956, 160
1912	58, 939	139, 920	274, 769	343, 392	47, 138	37, 290	296, 866	38, 131	82, 063	106, 993	222, 998	141, 224	1, 789, 723
1913	63, 186	117, 740	369, 032	285, 288	36, 283	38, 280	317, 543	43, 660	75, 630	103, 466	261, 155	133, 598	1, 844, 801
1914	54, 904	115, 161	325, 095	398, 604	45, 060	45, 513	330, 098	33, 957	78, 583	83, 923	308, 727	161, 750	1, 981, 375
1915	50, 415	126, 590	273, 181	398, 172	34, 637	45, 376	294, 395	51, 299	84, 006	106, 710	232, 628	146, 560	1, 843, 969
1916	50, 874	123, 789	237, 932	359, 316	24, 360	35, 652	212, 256	48, 870	78, 284	92, 202	210, 591	104, 468	1, 578, 585
1917	64, 053	97, 150	352, 730	419, 964	23, 131	39, 126	199, 727	40, 259	61, 618	74, 675	237, 506	82, 460	1, 691, 790
1918	41, 870	67, 000	287, 031	386, 460	16, 656	28, 457	221, 580	35, 050	31, 571	72, 721	218, 043	72, 440	1, 473, 879
1919	32, 650	58, 740	225, 050	599, 340	19, 053	22, 601	167, 088	33, 306	52, 466	63, 680	254, 042	85, 807	1, 613, 823
1920	19, 559	50, 220	149, 801	337, 169	19, 466	23, 015	150, 338	21, 140	40, 067	79, 062	188, 550	75, 272	1, 153, 649
1921	13, 730	51, 250	135, 625	196, 534	19, 038	23, 467	98, 904	10, 970	51, 226	76, 162	121, 104	59, 185	857, 195
1922	15, 536	47, 010	152, 632	244, 169	17, 626	25, 972	92, 516	33, 060	42, 188	61, 769	138, 312	60, 017	930, 807
1923	26, 830	42, 910	149, 623	257, 774	17, 094	30, 024	84, 682	29, 470	49, 884	60, 918	136, 414	69, 583	955, 206
1924	13, 978	46, 710	155, 375	303, 994	9, 236	27, 663	61, 963	28, 430	32, 884	46, 041	122, 905	49, 726	898, 905
1925	15, 524	38, 430	171, 310	341, 892	15, 024	29, 609	66, 849	34, 370	31, 903	(1)	-------	-------	--------

Division of Statistical and Historical Research. Compiled from Hay Trade Journal; Annual Reports of San Francisco Merchants' Exchange; Minneapolis Chamber of Commerce Reports and Daily Market Record; Chicago Board of Trade and Daily Trade Bulletin; Kansas City Grain Market Review.

[1] Not reported.

TABLE 279.—*Hay: Shipments from eight markets, 1910–1926*

Year beginning July	Baltimore	Chicago	Kansas City	Milwaukee	Minneapolis	Peoria	Pittsburgh	St. Louis	Total
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Average:									
1914–1920	--------	48, 483	153, 686	6, 761	4, 862	10, 901	41, 508	119, 829	397, 956
1921–1925	--------	14, 084	105, 178	7, 192	3, 371	3, 720	--------	--------	--------
1910	11, 864	18, 011	93, 828	5, 958	31, 350	10, 378	76, 631	112, 435	360, 450
1911	13, 257	49, 160	58, 896	4, 445	28, 910	17, 222	75, 420	146, 285	393, 595
1912	8, 313	22, 681	85, 176	3, 159	4, 820	7, 819	65, 800	105, 533	303, 301
1913	8, 995	39, 184	78, 756	9, 718	5, 500	16, 077	65, 148	139, 376	362, 754
1914	8, 896	83, 414	67, 608	17, 306	5, 390	19, 788	37, 512	172, 590	412, 504
1915	9, 681	55, 791	73, 668	6, 841	4, 156	9, 676	87, 216	90, 415	337, 444
1916	13, 657	33, 439	138, 432	5, 765	4, 351	15, 324	55, 032	103, 990	369, 990
1917	26, 913	62, 665	222, 912	5, 293	7, 042	10, 621	20, 536	177, 240	533, 222
1918	20, 221	52, 802	143, 040	2, 986	4, 147	7, 650	23, 511	119, 625	373, 982
1919	4, 118	32, 637	276, 492	5, 270	6, 925	6, 151	26, 267	111, 695	469, 555
1920	--------	18, 631	153, 648	3, 863	2, 020	7, 100	40, 480	63, 250	288, 992
1921	--------	9, 700	50, 748	10, 435	3, 531	4, 520	31, 509	43, 610	154, 053
1922	--------	10, 951	78, 660	14, 879	2, 625	3, 460	7, 323	61, 720	179, 618
1923	--------	14, 280	101, 048	6, 121	3, 584	2, 130	--------	54, 452	181, 615
1924	--------	8, 160	129, 780	2, 295	2, 352	1, 370	--------	48, 886	192, 843
1925	--------	27, 329	165, 656	2, 232	4, 764	7, 120	--------	--------	--------

Division of Statistical and Historical Research. Compiled from Hay Trade Journal; Chicago Board of Trade, and Daily Trade Bulletin; Kansas City Board of Trade, and Grain Market Review; Minneapolis Daily Market Record; Peoria Board of Trade.

TABLE 280.—*Hay, tame: Estimated price per ton, received by producers, December 1, average 1921–1925, annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Dols.	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*
Me.	14.22	20.00	13.10	13.50	13.00	12.00	13.20
N. H.	20.70	28.00	19.50	19.00	18.50	18.50	19.00
Vt.	17.06	22.00	17.50	16.50	16.10	13.20	14.50
Mass.	24.60	27.00	23.00	26.00	24.00	23.00	23.90
R. I.	25.56	27.00	26.50	26.80	24.00	23.50	25.00
Conn.	25.10	26.00	26.00	24.00	25.00	24.50	25.70
N. Y.	15.48	18.00	14.10	16.20	14.50	14.60	15.00
N. J.	20.40	18.00	18.10	26.90	19.00	20.00	20.30
Pa.	17.16	17.00	14.30	21.50	16.00	17.00	18.50
Ohio.	13.40	11.50	10.80	16.70	12.80	15.20	14.00
Ind.	13.56	13.00	11.20	15.60	12.50	15.50	14.00
Ill.	14.04	13.50	12.50	14.80	13.50	15.90	16.00
Mich.	13.24	13.00	10.10	14.50	12.10	16.50	13.80
Wis.	14.20	15.40	12.30	16.00	13.30	14.00	15.00
Minn.	10.62	8.60	10.70	11.30	11.50	11.00	14.20
Iowa.	11.34	9.30	10.00	12.50	11.40	13.50	15.50
Mo.	11.62	9.80	11.50	12.00	12.00	12.80	13.50
N. Dak.	7.36	7.70	7.50	6.80	7.60	7.20	11.00
S. Dak.	8.38	6.40	7.50	8.10	8.90	11.00	13.00
Nebr.	10.02	7.00	11.20	10.20	9.60	12.10	14.00
Kans.	10.24	8.00	9.30	10.60	11.20	12.10	13.00
Del.	18.90	17.50	19.00	21.00	17.00	20.00	18.50
Md.	18.52	15.10	18.50	23.60	16.40	19.00	20.00
Va.	18.50	17.70	16.00	20.00	17.80	21.00	19.50
W. Va.	18.36	17.50	16.80	19.90	17.60	20.00	19.40

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Dols.	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*
N. C.	20.20	19.80	18.20	20.00	21.00	22.00	20.00
S. C.	19.50	20.00	17.50	18.00	22.00	20.00	20.00
Ga.	18.34	15.80	17.00	18.90	19.00	21.00	18.00
Fla.	20.20	19.50	18.50	23.00	20.00	20.00	22.00
Ky.	16.74	15.50	14.50	17.00	18.00	18.70	16.70
Tenn.	18.48	15.50	16.40	18.50	20.00	22.00	16.60
Ala.	18.02	15.60	17.00	18.50	19.00	20.00	18.00
Miss.	15.94	14.50	14.50	15.50	17.50	17.70	16.00
Ark.	15.30	12.50	13.60	16.00	16.40	18.00	16.00
La.	15.82	14.00	13.30	15.00	17.80	19.00	14.50
Okla.	12.86	8.20	12.50	14.30	13.30	16.00	12.00
Tex.	14.60	9.90	11.50	16.00	16.80	18.80	12.00
Mont.	9.32	8.70	9.00	8.90	10.00	10.00	10.50
Idaho.	9.26	6.70	10.00	8.90	12.20	8.50	9.00
Wyo.	8.86	7.50	8.50	9.60	9.80	8.90	8.50
Colo.	10.48	6.90	11.20	11.30	11.00	12.00	8.60
N. Mex.	15.72	13.70	19.50	16.00	15.40	14.00	12.00
Ariz.	15.86	13.00	18.00	15.00	16.30	17.00	18.00
Utah.	8.86	6.20	8.20	8.90	12.00	9.00	8.00
Nev.	11.00	9.00	11.80	11.00	14.20	9.00	10.50
Wash.	13.84	10.50	16.20	12.00	15.50	15.00	13.70
Oreg.	11.86	9.80	13.60	11.00	13.30	11.60	11.00
Calif.	15.14	11.00	15.00	14.00	21.70	14.00	12.30
U. S.	13.30	12.11	12.56	14.13	13.77	13.94	14.09

Division of Crop and Livestock Estimates. As reported by crop reporters.

TABLE 281.—*Hay, all (loose): Estimated price per ton, received by producers, United States, 1909–1926*

Year beginning July	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted av.
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909–1913	11.60	11.35	11.39	11.49	11.89	11.99	11.87	12.02	12.06	12.16	12.28	12.16	11.83
1914–1920	14.95	14.47	14.52	14.53	14.69	14.99	15.32	15.51	15.63	15.99	16.35	16.07	15.26
1921–1925	12.27	11.94	11.91	11.93	12.25	12.47	12.58	12.62	12.64	12.83	12.92	12.63	12.39
1909	10.12	9.70	9.85	10.19	10.42	10.48	10.90	11.48	11.57	11.30	10.96	10.80	10.58
1910	10.75	10.98	11.16	11.16	11.67	11.92	11.74	11.68	11.46	11.52	12.04	12.78	11.54
1911	13.51	13.73	13.58	13.57	13.95	14.02	14.07	14.52	15.15	15.98	16.26	15.27	14.36
1912	13.18	11.62	11.12	11.05	11.44	11.45	10.98	10.74	10.52	10.42	10.48	10.51	11.17
1913	10.45	10.74	11.24	11.48	11.97	12.06	11.68	11.68	11.60	11.58	11.64	11.46	11.49
1914	11.02	10.93	11.03	10.87	10.95	10.80	10.65	10.86	10.94	11.00	11.10	11.00	10.92
1915	10.52	10.07	9.89	9.90	9.92	9.97	10.31	10.65	10.80	11.06	11.37	11.28	10.34
1916	10.50	9.80	9.68	9.82	10.31	10.74	11.10	11.44	12.04	13.24	14.31	14.32	11.21
1917	13.43	13.68	13.54	14.50	15.85	17.32	18.48	19.01	18.91	18.32	17.55	16.60	16.60
1918	16.00	16.67	17.94	18.86	19.31	19.64	19.80	19.80	20.17	21.42	22.80	22.52	19.88
1919	20.94	20.34	20.16	19.58	19.40	20.00	21.16	22.04	22.62	23.58	24.54	24.24	21.34
1920	22.26	20.38	19.41	18.20	17.08	16.43	15.70	14.76	13.94	13.34	12.80	12.56	16.51
1921	12.17	11.72	11.53	11.24	11.19	11.29	11.34	11.58	12.05	12.64	12.82	12.28	11.83
1922	11.44	10.78	10.68	10.87	11.38	11.82	11.98	12.04	12.18	12.54	12.82	12.32	11.68
1923	11.78	11.98	12.25	12.44	12.75	13.15	13.59	13.60	13.63	13.73	13.65	13.75	12.93
1924	13.49	12.95	12.68	12.64	12.88	12.69	12.70	12.83	12.39	12.48	12.17	11.82	12.76
1925	12.48	12.25	12.42	12.47	13.07	13.40	13.31	13.03	12.97	12.78	13.12	12.98	12.77
1926	12.96	13.04	12.88	13.08	13.22	13.47	------	------	------	------	------	------	--------

Division of Crop and Livestock Estimates. Mean of prices reported on 1st of month and 1st of succeeding month, July, 1909–December, 1923. As reported by country merchants.

TABLE 282.—*Hay, alfalfa: Estimated price per ton received by producers, United States, 1914–1926*

Year beginning July	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted av.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1914	8.65	8.32	8.72	8.96	9.20	9.05	9.48	9.32	9.72	9.81	9.58	8.50	9.12
1915	8.28	8.28	8.22	8.14	8.72	9.52	9.89	10.35	10.74	10.73	10.56	10.49	9.39
1916	9.87	9.80	10.06	10.25	11.37	12.31	12.79	13.63	14.68	17.68	17.92	16.77	12.76
1917	14.13	15.28	16.33	17.59	19.19	20.39	21.27	21.38	20.82	18.97	17.84	16.74	18.42
1918	16.58	18.22	19.72	20.23	20.42	20.74	20.42	20.91	21.40	22.28	23.32	20.89	20.35
1919	20.15	20.72	20.89	20.56	21.63	22.95	24.13	24.41	24.68	24.57	25.68	24.28	22.78
1920	21.70	20.43	19.12	18.03	17.10	16.59	14.98	13.55	12.88	11.35	10.88	10.64	15.96
1921	9.85	9.66	9.86	9.82	9.67	10.46	10.55	11.04	11.80	12.39	12.28	10.98	10.58
1922	10.61	10.54	11.15	11.87	12.70	13.31	14.06	14.02	14.33	14.09	14.40	13.63	12.82
1923	12.45	12.01	12.78	13.37	13.59	14.39	13.99	14.08	13.98	14.09	14.12	13.70	13.54
1924	13.19	13.84	13.59	12.86	13.91	13.40	14.50	14.78	14.44	14.08	14.34	12.83	13.81
1925	13.02	13.00	12.91	13.41	13.74	14.14	13.90	14.24	13.50	13.53	13.17	13.33	13.52
1926	12.94	13.15	13.13	13.29	13.79	13.57	------	------	------	------	------	------	------

Division of Crop and Livestock Estimates.

TABLE 283.—*Hay, clover: Estimated price per ton received by producers, United States, 1914–1926*

Year beginning July	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted av.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1914	11.85	12.09	12.44	12.47	12.70	12.76	13.07	13.36	13.41	13.65	13.79	12.78	12.83
1915	11.65	10.87	10.82	10.60	10.59	10.95	11.24	11.41	11.70	11.87	12.52	12.46	11.29
1916	10.84	9.93	10.01	10.08	10.46	10.86	11.38	11.65	11.90	13.06	13.94	14.22	11.33
1917	12.95	12.76	13.79	15.01	17.14	18.67	19.82	21.11	21.37	19.68	18.30	16.54	17.21
1918	15.73	17.18	19.27	20.60	21.13	21.26	21.69	21.11	21.35	23.36	25.33	25.48	20.93
1919	22.02	21.58	21.74	21.17	21.61	22.60	23.78	24.94	26.13	26.93	28.31	27.80	23.69
1920	24.62	22.82	22.57	21.29	20.60	19.96	19.17	17.39	16.44	15.47	14.90	14.52	19.48
1921	13.89	14.17	14.37	13.99	13.83	14.17	13.90	14.10	14.06	14.51	14.90	14.33	14.15
1922	12.82	12.66	12.54	12.51	12.67	13.03	13.39	13.35	13.24	13.47	13.58	13.70	13.03
1923	13.52	13.51	14.12	14.73	14.94	15.82	15.61	15.93	16.31	16.08	15.92	15.95	15.14
1924	15.45	14.00	13.75	13.65	13.64	13.45	13.25	13.30	12.52	12.41	12.67	12.26	13.43
1925	13.03	13.67	14.06	14.00	14.74	15.28	14.79	14.82	14.79	14.88	15.13	15.07	14.52
1926	14.40	14.25	14.60	14.71	14.76	15.24	------	------	------	------	------	------	------

Division of Crop and Livestock Estimates.

TABLE 284.—*Hay, timothy: Estimated price per ton, received by producers, United States, 1914–1926*

Year beginning July	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted av.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1914	13.06	13.09	13.54	13.66	13.69	13.69	14.07	14.28	14.28	14.53	14.74	14.33	13.87
1915	13.43	12.39	12.32	12.14	12.24	12.73	13.11	13.39	13.61	14.00	14.50	14.71	13.09
1916	12.07	11.74	11.57	11.54	12.08	12.29	12.61	12.91	13.20	14.26	15.31	15.76	12.83
1917	14.68	14.11	14.89	16.23	18.33	20.31	21.37	22.25	22.53	21.47	20.40	18.55	18.67
1918	17.61	18.98	20.85	22.60	22.93	22.94	23.48	22.69	22.68	24.74	27.27	27.50	22.66
1919	24.22	23.89	23.65	23.04	22.90	23.71	24.59	25.49	26.75	27.99	29.92	30.05	25.13
1920	26.59	24.35	24.15	22.74	22.09	21.22	19.88	18.30	17.04	16.09	15.44	15.16	20.64
1921	14.51	15.61	14.83	14.39	14.22	14.31	14.51	14.77	15.06	15.52	16.10	15.75	14.82
1922	14.33	13.61	13.44	13.70	13.93	13.91	14.41	14.46	14.59	14.64	14.96	14.95	14.18
1923	14.86	14.68	15.13	16.22	16.78	16.95	16.96	17.25	17.53	17.58	17.48	17.52	16.53
1924	16.74	15.24	14.47	14.54	14.00	14.37	14.29	14.24	13.31	13.39	13.38	13.05	14.30
1925	13.89	14.06	14.98	15.11	15.38	15.87	15.82	15.79	15.59	15.81	16.31	16.64	15.40
1926	16.01	15.52	15.32	15.49	15.62	15.81	------	------	------	------	------	------	------

Division of Crop and Livestock Estimates.

TABLE 285.—*Hay, prairie: Estimated price per ton, received by producers, United States, 1914–1926*

Year beginning July	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1914	7.49	7.29	7.33	7.59	7.49	7.37	7.65	7.86	8.03	8.58	8.29	7.72	7.69
1915	7.37	6.83	6.64	6.44	6.75	6.95	7.38	7.34	7.39	7.56	7.71	7.97	7.13
1916	7.25	6.96	7.21	7.26	7.85	8.14	8.58	8.60	9.32	10.94	12.02	11.84	8.61
1917	10.11	10.82	11.40	12.29	13.32	14.91	15.39	15.74	15.47	14.47	12.75	12.78	13.31
1918	12.51	13.26	14.35	15.06	15.47	16.30	16.33	16.35	17.38	18.85	20.22	18.71	16.03
1919	16.10	16.10	15.90	15.88	16.91	17.19	17.54	17.36	16.52	16.66	18.06	17.59	16.78
1920	15.38	13.74	12.93	11.83	11.47	10.80	10.20	9.46	8.70	8.43	8.05	8.02	10.94
1921	7.67	7.50	7.52	6.78	7.49	7.47	7.39	7.67	7.94	8.02	8.24	8.40	7.62
1922	7.68	7.76	7.54	7.74	8.13	8.98	9.44	9.52	9.61	9.74	10.64	10.07	8.79
1923	9.17	8.97	8.58	9.19	9.07	9.26	8.84	8.87	8.66	8.78	8.74	8.54	8.90
1924	8.35	8.60	8.49	8.25	8.25	8.62	9.14	9.08	9.05	9.11	9.27	8.55	8.26
1925	8.93	8.55	9.24	9.41	9.39	9.78	9.73	9.53	9.48	9.08	9.54	9.59	9.37
1926	9.63	10.55	10.52	10.78	10.76	10.98	------	------	------	------	------	------	------

Division of Crop and Livestock Estimates.

TABLE 286.—*Hay, alfalfa No. 1: Average price per ton at Kansas City, 1910–1926*

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1914–1920	19.02	21.29	20.97	21.87	23.61	24.19	24.29	23.83	23.71	24.43	24.17	21.98	22.78
1921–1925	17.74	19.04	19.73	21.92	22.30	22.32	22.71	21.52	22.76	23.67	22.99	18.21	21.24
1910	12.08	13.50	13.89	14.25	14.26	14.23	13.51	12.93	13.07	18.67	13.29	12.38	13.42
1911	15.13	14.44	14.87	15.00	15.27	15.50	17.72	18.37	20.49	22.73	19.34	11.62	16.71
1912	12.59	13.00	13.58	15.11	15.11	15.00	14.79	12.86	14.06	13.75	13.28	10.70	13.65
1913	12.12	14.80	16.14	16.54	16.00	16.01	15.96	15.25	15.18	15.30	15.54	14.23	15.26
1914	12.38	13.42	13.33	12.51	13.21	13.79	13.75	13.73	14.75	15.11	13.73	13.42	13.59
1915	11.54	11.90	12.25	13.11	12.83	14.35	14.54	15.34	13.92	14.44	14.45	11.42	13.34
1916	11.29	13.40	13.58	15.68	18.50	19.33	19.81	20.25	21.10	24.33	24.52	21.87	18.64
1917	21.18	24.09	24.07	27.43	31.10	32.76	30.01	31.33	27.56	24.11	22.64	20.57	26.40
1918	22.60	29.08	31.45	30.14	31.21	31.01	32.85	31.01	34.56	37.00	36.20	36.43	32.04
1919	26.93	27.63	24.86	30.24	33.39	35.10	35.75	34.83	33.79	34.10	35.46	31.75	31.99
1920	27.21	29.49	27.22	23.95	25.06	23.01	23.30	20.30	20.30	21.00	22.20	18.40	23.45
1921	17.50	19.00	17.20	19.80	20.40	19.60	20.00	19.60	22.10	22.50	22.10	15.40	19.60
1922	15.80	15.80	18.30	22.60	23.80	23.60	23.40	23.70	24.60	26.25	25.90	22.90	22.15
1923	18.90	20.90	22.80	24.90	24.80	24.90	25.30	23.50	24.70	26.10	24.50	18.00	23.23
1924	18.60	20.00	20.25	20.80	21.25	22.70	22.70	19.25	19.60	18.90	19.20	17.50	20.06
1925	18.20	19.50	20.10	21.50	21.25	21.40	22.15	21.56	22.81	24.62	23.25	17.25	21.13
1926	17.80	18.25	19.38	19.90	20.67	20.40	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from Kansas City Daily Price Current and Kansas City Grain Market Review, average of daily range; 1925–26, from reports of the Division of Hay, Feed, and Seed weekly.

TABLE 287.—*Hay, prairie No. 1: Average price per ton at Kansas City, 1910–1926*

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1914–1920	15.35	15.71	16.00	16.27	17.20	17.21	16.90	16.48	17.66	18.96	19.53	18.23	17.12
1921–1925	12.04	11.30	11.97	13.56	13.26	12.95	12.73	12.44	13.04	14.21	14.72	14.23	13.04
1910	10.88	10.82	11.67	11.34	11.16	10.86	11.07	10.95	10.84	11.31	11.55	13.61	11.33
1911	15.93	12.93	11.50	11.60	12.07	12.61	13.84	13.66	16.70	20.85	20.48	15.16	14.78
1912	8.79	7.96	8.39	8.96	8.91	9.39	10.45	9.37	9.19	9.56	9.53	9.97	9.21
1913	10.60	13.62	15.76	16.00	15.66	15.57	14.20	14.50	14.40	16.00	16.42	15.43	14.85
1914	12.10	9.96	11.58	11.35	10.94	10.98	11.25	10.89	11.26	11.41	11.02	11.03	11.15
1915	11.32	8.65	8.63	9.71	9.54	8.97	8.84	9.15	8.96	9.50	9.74	8.65	9.30
1916	8.50	8.06	9.36	9.47	10.74	11.15	10.57	10.92	12.92	18.68	19.74	20.57	12.56
1917	18.14	18.57	18.06	19.60	25.07	25.47	24.00	23.79	23.42	21.13	19.17	17.66	21.17
1918	19.26	25.25	26.57	27.58	26.84	24.04	28.25	26.82	32.35	36.63	38.91	37.34	29.15
1919	20.80	19.98	19.32	19.75	21.12	25.34	21.40	20.68	20.64	21.70	24.02	18.95	21.15
1920	17.21	19.52	18.47	16.45	16.13	14.49	14.00	13.10	14.10	13.70	14.10	13.40	15.39
1921	12.30	11.40	11.30	12.40	12.00	11.30	11.10	10.30	11.50	11.90	12.40	11.90	11.65
1922	12.90	10.70	11.00	14.00	14.20	12.70	12.60	13.25	14.60	19.10	19.10	18.60	14.40
1923	11.80	11.50	13.80	14.60	14.75	14.75	14.80	14.50	14.80	14.50	13.90	12.50	13.85
1924	11.60	11.60	11.00	12.40	11.60	11.90	11.00	10.40	10.50	10.30	10.60	10.75	11.14
1925	11.60	11.30	12.75	14.40	13.75	14.10	14.15	13.75	13.81	15.25	17.62	17.38	14.16
1926	14.12	13.38	14.25	15.40	16.00	15.80	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from Kansas City Daily Price Current and Kansas City Grain Market Review, average of daily range; 1925–26, from reports of the Division of Hay, Feed, and Seed, weekly.

TABLE 288.—*Hay, timothy No. 1: Average price per ton at Chicago, 1910–1926*

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1914–1920	23.39	24.86	23.68	23.54	23.71	23.25	23.59	22.88	23.83	25.33	26.16	24.50	24.06
1921–1925	24.40	24.52	24.42	24.12	24.05	23.50	23.73	22.85	23.63	24.55	24.37	24.31	24.04
1910	18.75	19.50	17.25	17.25	17.50	17.50	18.00	16.25	16.25	17.75	21.00	21.75	18.23
1911	23.50	21.50	20.00	20.50	21.25	21.00	21.75	20.75	21.50	24.00	26.00	21.25	21.92
1912	19.75	18.50	18.50	18.00	17.00	15.50	15.75	14.25	14.75	15.50	15.25	14.25	16.42
1913	15.00	17.75	17.75	18.00	17.00	16.25	15.50	14.75	15.25	16.00	16.25	15.25	16.23
1914	16.25	16.75	15.50	15.25	15.50	15.50	16.25	15.50	15.25	16.25	17.00	17.50	16.04
1915	19.25	20.25	19.00	17.00	15.80	15.50	16.25	15.50	16.75	18.75	18.75	18.00	17.54
1916	16.00	16.00	15.50	16.25	16.25	16.25	15.50	15.75	15.75	18.00	20.50	18.75	16.71
1917	17.75	19.25	21.00	25.00	27.25	27.00	28.25	29.00	28.00	24.00	23.00	19.00	24.04
1918	21.50	26.50	32.00	31.00	30.00	30.00	29.50	26.00	30.50	33.50	35.50	33.00	29.92
1919	34.50	35.00	29.00	28.00	29.50	30.00	32.50	34.00	35.25	43.00	46.50	42.75	35.00
1920	38.50	40.25	33.75	32.25	32.00	28.50	26.90	24.40	25.30	23.80	21.90	22.50	29.17
1921	24.40	24.00	24.20	22.60	22.90	21.90	22.50	21.80	23.60	26.80	25.70	23.60	23.67
1922	24.50	22.00	20.90	22.40	23.00	21.10	21.75	21.50	[illegible]	23.00	23.10	24.00	22.52
1923	24.00	25.20	26.60	26.50	26.80	27.10	26.80	24.80	[illegible]	26.20	26.30	25.20	25.90
1924	25.00	25.40	24.40	22.90	22.80	23.00	23.30	22.75	23.00	22.75	21.75	24.00	23.42
1925	24.10	26.00	26.00	26.20	24.75	24.40	24.30	23.38	23.25	24.00	25.00	24.75	24.68
1926	24.40	24.75	23.38	22.50	21.12	22.50							

Division of Statistical and Historical Research. Compiled from Chicago Board of Trade and Daily Trade Bulletin, average of daily range; 1925–26, from reports of the Division of Hay, Feed, and Seed, weekly.

TABLE 289.—*Hay and straw: Average price per ton at Chicago, 1926*

Class and grade	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Alfalfa, No. 1	24.00	24.50	23.50	23.50	23.20	22.75	19.90	21.88	22.88	23.20	24.00	24.00
Alfalfa, standard	21.60	21.50	20.67									
Alfalfa, No. 2	19.60	19.50	18.50	19.00	20.00	19.38	16.70	18.75	19.75	20.00	20.62	20.50
Clover, No. 1	22.20	21.25	20.50	21.00	19.80	19.00	17.20	19.00	20.50	20.80	21.62	22.67
Clover, No. 1:												
Medium mixed	22.00	22.00	22.00	22.00								
Light mixed	24.25	23.38	23.25	24.00								
Clover, No. 2, light mixed	21.30	20.38	19.25	21.00								
Prairie, No. 1:												
Midland	12.62	11.12	12.00	13.67	15.40	15.75	15.00	15.00	15.00	15.20	15.83	16.00
Upland	17.40	17.00	17.00	17.50	21.20	21.50	20.40	18.00	19.00	20.20	20.50	19.67
Prairie, No. 2, upland	15.20	15.00	15.00	15.50	19.20	19.50	18.60	17.00	17.00	18.00	18.00	18.00
Timothy, No. 1	24.30	23.38	23.25	24.00	25.00	24.75	24.40	24.75	23.38	22.50	21.12	22.50
Timothy, No. 2	21.40	20.62	20.25	21.00	22.00	21.75	20.40	21.12	21.25	20.50	20.00	20.33
Oat straw	12.20	10.75	11.25	11.75	12.00	10.62	11.80	11.62	11.88	13.60	12.88	13.50
Rye straw	14.20	14.50	14.50	14.50	15.00	15.50	15.50	14.25	14.50	15.95	16.00	16.00
Wheat straw	11.60	10.62	11.25	11.75	12.00	11.00	12.30	10.88	11.62	12.90	12.75	13.50

Division of Statistical and Historical Research. Compiled from reports of the Division of Hay, Feed, and Seed, average of weekly range.

PASTURE [1]

TABLE 290.—*Pasture: Condition, first of month, United States, 1909–1926*

Year	May	June	July	August	September	October	Year	May	June	July	August	September	October
Average:	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*		*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
1909–1913	83.5	87.5	82.0	76.4			1917	79.9	83.1	84.1	78.5	77.5	75.5
1914–1920	84.9	90.5	89.2	82.9			1918	81.6	89.3	82.0	72.4	67.7	73.5
1921–1925	84.0	85.8	84.1	79.2	77.0	78.8	1919	91.1	97.4	95.8	85.3	81.6	78.9
							1920	79.3	90.2	91.4	87.7	88.1	86.9
1909	79.1	86.9	91.8	86.4									
1910	86.9	87.1	79.7	71.5			1921	90.0	89.4	84.4	78.3	82.1	84.6
1911	83.1	82.7	67.2	62.7			1922	85.9	94.6	88.5	86.7	78.7	72.7
1912	82.9	92.5	80.7	87.3			1923	79.4	86.1	87.2	79.4	86.2	85.0
1913	85.5	88.1	81.6	74.3			1924	82.4	83.2	87.2	82.0	76.6	78.6
							1925	82.2	75.7	73.0	69.5	67.4	72.9
1914	88.9	90.0	88.0	76.2									
1915	88.4	92.5	93.2	95.5	97.7	95.9	1926	74.6	77.0	77.0	69.9	78.2	83.7
1916	84.8	90.8	94.8	84.5	79.8	76.9							

Division of Crop and Livestock Estimates.

[1] United States averages differ from those published in former Yearbooks, because of change in State weights. Reweighted on basis of pasture land, animal units, hay production, etc.

HOPS

TABLE 291.—*Hops: Acreage, production, and December 1 price, United States, 1915–1926*

Year	Acreage	Average yield per acre	Production	Price per pound received by producers Dec. 1	Year	Acreage	Average yield per acre	Production	Price per pound received by producers Dec. 1
	Acres	*Pounds*	*1,000 pounds*	*Cents*		*Acres*	*Pounds*	*1,000 pounds*	*Cents*
1915	44,653	1,187	52,986	11.7	1921	27,000	1,087	29,340	24.1
1916	43,900	1,153	50,595	12.0	1922	23,400	1,186	27,744	8.6
1917	29,900	983	29,388	33.3	1923	18,440	1,071	19,751	18.8
1918	25,900	829	21,481	19.3	1924	20,350	1,360	27,670	10.3
1919	21,000	1,189	24,970	77.6	1925	20,350	1,404	28,573	21.8
1920	28,000	1,224	34,260	35.7	1926 [1]	20,800	1,415	29,428	23.0

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 292.—*Hops: Acreage, production, and December 1 price, by States, 1924–1926*

State	Acreage			Average yield per acre			Production			Price per pound received by producers Dec. 1		
	1924	1925	1926 [1]	1924	1925	1926	1924	1925	1926 [1]	1924	1925	1926
	Acres	*Acres*	*Acres*	*Lbs.*	*Lbs.*	*Lbs.*	*1,000 lbs.*	*1,000 lbs.*	*1,000 lbs.*	*Cts.*	*Cts.*	*Cts.*
Washington	2,350	2,350	2,400	1,817	2,116	2,320	4,270	4,973	5,568	10.0	21.0	21.0
Oregon	12,000	13,000	13,000	1,150	1,200	1,150	13,800	15,600	14,950	10.0	23.0	25.0
California	6,000	5,000	5,400	1,600	1,600	1,650	9,600	8,000	8,910	11.0	20.0	21.0
United States	20,350	20,350	20,800	1,360	1,404	1,415	27,670	28,573	29,428	10.3	21.8	23.0

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 293.—*Hops: Acreage, yield per acre and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*

Country	Acreage: Average 1909–1913 [1]	Acreage: Average 1921–1925	Acreage: 1924	Acreage: 1925	Acreage: 1926, preliminary	Yield per acre: Average 1909–1913 [1]	Yield per acre: Average 1921–1925	Yield per acre: 1924	Yield per acre: 1925	Yield per acre: 1926, preliminary	Production: Average 1909–1913 [1]	Production: Average 1921–1925	Production: 1924	Production: 1925	Production: 1926, preliminary
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
North America:															
Canada [2]	[3] 718	507	507	507		[3] 1,429	1,659	1,604	1,673		[1] 1,026	841	813	843	
United States [4]	[5] 45,000	21,908	20,350	20,350	20,800	[5] 1,103	1,215	1,360	1,404	1,415	53,654	26,616	27,670	28,573	29,428
Europe:															
England and Wales	33,797	25,726	25,897	26,256	25,600	977	1,353	1,925	1,514	1,452	33,021	34,810	49,840	39,760	37,184
Belgium	5,313	3,449	3,123	3,158	3,500	1,319	1,238	1,754	1,776	1,428	7,008	4,269	5,478	5,609	4,998
France	17,072	10,338	10,052	10,267	10,700	788	829	1,113	1,078	913	13,459	8,575	11,187	11,069	9,764
Germany	56,267	29,161	28,738	30,821	35,030	515	349	432	345	159	28,961	10,175	12,418	10,646	5,562
Austria	[6] 6,210	257	264	277	300	[6] 573	374	352	386	273	[6] 3,560	96	93	107	82
Czechoslovakia	38,385	20,024	20,242	22,343	25,900	599	630	1,085	692	722	22,997	12,618	21,967	15,466	18,687
Hungary	[6] 628	199	178	[7] 107	[7] 102	[6] 814	603	596	617		[6] 511	120	106	66	
Yugoslavia	3,749	4,399	5,503	5,019		725	677	876	486		2,718	2,976	4,818	2,439	[7] 6,272
Rumania	[6] 664	[6] 371	[7] 371			[6] 825	[6] 446	593			[6] 548	174	[7] 220	[7] 207	
Poland	11,963	[6] 5,214	4,964	6,175		493	[6] 625	653	548		5,897	3,093	3,243	3,383	[7] 3,024
Russia											6,797				
Total all countries reporting for all periods shown	157,672	89,154	88,494	93,229	101,132	[8] 694	[8] 793	[8] 1,142	[8] 888	[8] 755	117,621	76,612	109,044	88,479	85,573
Oceania:															
Australia	1,251	[9] 1,684				1,285	[9] 1,461				1,607	2,072	[7] 1,300	[7] 1,680	[7] 1,600
New Zealand	[6] 653	660	738	648		[10] (1,455)	1,395	1,542	1,159		[10] (950)	921	1,138	751	[7] 500
Total countries reporting acreage and production for all periods shown	202,672	111,062	108,844	113,579	121,932	[11] 805	[11] 876	[11] 1,184	[11] 980	[1] 868	173,832	106,221	139,152	119,483	117,241
Estimated world total, exclusive of Russia [12]	221,670	123,900	122,700	128,000							175,917	107,355	140,292	120,602	

Division of Statistical and Historical Research: Official sources and International Institute of Agriculture except as otherwise stated. Production figures are for the crop harvested in the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere.

[1] Figures for Europe are estimates for present boundaries.
[2] British Columbia.
[3] Two-year average.
[4] Principal producing States.
[5] One year only.
[6] Four-year average.
[7] Unofficial.
[8] Average yield in six European countries.
[9] Three-year average.
[10] Rough estimate of production for one year based on acreage for that year and yields in later years.
[11] Average yield in six European countries and the United States.
[12] Exclusive of acreage and production in minor producing countries, for which no data are available.

TABLE 294.—*Hops: Acreage, production, imports, exports, and consumption in the United States, 1910–1926*

Year beginning July	Acreage	Production	Imports	Exports		Consumption by brewers[1]
				Domestic	Foreign	
	Acres	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1910	(2)	(2)	8, 557, 531	13, 104, 774	17, 974	45, 068, 811
1911	(2)	(2)	2, 991, 125	12, 190, 663	35, 869	42, 436, 665
1912	(2)	(2)	8, 494, 144	17, 591, 195	35, 859	44, 237, 735
1913	(2)	(2)	5, 382, 025	24, 262, 896	30, 224	43, 987, 623
1914	(2)	(2)	11, 651, 332	16, 210, 443	16, 947	38, 839, 294
1915	44, 653	52, 986, 000	675, 704	22, 409, 818	134, 571	37, 451, 610
1916	43, 900	50, 595, 000	236, 849	4, 874, 876	26, 215	41, 949, 225
1917	29, 900	29, 388, 000	121, 288	3, 494, 579	37, 823	33, 481, 415
1918	25, 900	21, 481, 000	6	7, 466, 952	4, 719	13, 924, 650
1919	21, 000	24, 970, 000	2, 696, 264	30, 779, 506	104, 198	6, 440, 894
1920	28, 000	34, 286, 000	4, 807, 998	22, 206, 028	827, 803	5, 988, 982
1921	27, 000	29, 340, 000	893, 324	19, 521, 647	487, 633	4, 452, 676
1922	23, 400	27, 744, 000	1, 294, 644	13, 497, 183	198, 096	4, 555, 759
1923	18, 440	19, 751, 000	761, 174	20, 460, 705	132, 572	3, 814, 858
1924	20, 350	27, 670, 000	438, 996	16, 121, 978	54, 022	[3] 3, 255, 945
1925	20, 350	28, 573, 000	581, 009	14, 997, 974	175, 279	[3] 3, 425, 566
1926 [4]	20, 800	29, 428, 000				

Division of Statistical and Historical Research. Compiled from reports of the Bureau of Foreign and Domestic Commerce, and Division of Crop and Livestock Estimates; figures on consumption from records of the Bureau of Internal Revenue.

[1] Figures for 1919 and subsequent years represent hops used to make cereal beverages.
[2] Not available.
[3] Not including 57,936 pounds of hops in 1924 and 71,508 pounds in 1925 used in the manufacture of distilled spirits.
[4] Preliminary.

TABLE 295.—*Hops: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Austria-Hungary	938	18, 333						
Czechoslovakia			526	6, 826	2, 647	19, 317	1, 787	12, 389
France	5, 436	335	3, 807	4, 513	4, 081	8, 108	4, 014	9, 114
New Zealand	61	352	16	282	3	663	2	340
Poland			152	1, 548	719	624	308	1, 661
United States	6, 235	15, 416	1, 018	20, 041	406	17, 391	592	20, 655
Yugoslavia			[1] 339	5, 078	[1] 192	2, 817	[1] 298	[1] 6, 964
PRINCIPAL IMPORTING COUNTRIES								
Argentina	618		996		538		1, 142	
Australia	1, 106	22	[2] 222	[2] 955	[2] 168	[2] 3	[1] 168	[1] 3
Austria			3, 263	140	2, 881	[1] 156	3, 058	[1] 127
Belgium	6, 915	4, 814	4, 673	2, 389	3, 800	3, 664	5, 381	3, 964
British India	246		294		164		171	
Canada	1, 396	176	4, 240	1, 182	2, 064	700	3, 524	85
Denmark	1, 027	[3] 1	489	8	755	5	683	[1] 1
Germany	7, 688	17, 564	2, 056	4, 250	14, 003	2, 217	12, 888	1, 666
Hungary			74	92	412	103	275	82
Irish Free State					8, 156		6, 758	
Italy	529	10	504	13	669	52	732	14
Japan	253		924		1, 209		901	
Netherlands	2, 938	1, 405	1, 228	716	1, 294	317	961	207
Norway	289		362		384		402	
Russia	1, 258	2, 348	[1] 72		[1] 401		[1] 542	
Sweden	987	1	1, 040	3	947	12	978	
Switzerland	1, 257	[4] 2	521		843		828	
Union of South Africa	487		398		304		466	
United Kingdom	21, 028	2, 162	1, 356	2, 470	10, 039	4, 963	10, 114	4, 989
Other countries	2, 277		3, 605	8, 830	3, 345	24	2, 984	
Total	62, 969	62, 941	32, 175	59, 336	60, 424	61, 136	50, 457	62, 261

Division of Statistical and Historical Research. Official sources except where otherwise noted. Lupulin and hopfenmehl (hop meal) are not included.

[1] International Yearbook of Agricultural Statistics.
[2] Year beginning July 1.
[3] Three-year average.
[4] One year only.

TABLE 296.—*Hops: Wholesale price per pound, 1913–1926*

Year	New York State, prime to choice			San Francisco		
	Low	High	Average[1]	Low	High	Average[1]
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1913	17	48		19	30	
1914	23	50		10	30	
1915	13	30		10	15	
1916	15	55		7	14	
1917	34	90		6	40	
1918	23	54	37.9	19	22.5	19.5
1919	37	85	59.9	34	84	59.2
1920	41	105	80.2	33	85	61.6
1921	26	50	37.0	12	35	24.4
1922	19	40	25.3	9	30	17.6
1923	19	58	32.5	10	35	17.2
1924	31	58	47.3	12.5	40.0	24.2
1925	28	65	39.9	11	25	13.9
1926	50	65	59.6	[2] 18	[2] 25	[3] 23.2

Division of Statistical and Historical Research, compiled from New York Journal of Commerce and San Francisco Daily Commercial News.

[1] Monthly averages are computed from daily ranges. Yearly averages are simple averages of monthly

[2] Low and high quotations given through May 14; no prices quoted from May 14 to July 22, after which date average price only is quoted.
[3] Average for 9 months only.

PEANUTS

TABLE 297.—*Peanuts: Acreage, production, and Nov. 15 price, United States, 1916–1926*

Year	Acreage	Average yield per acre	Production	Price per pound received by producers Nov. 15	Year	Acreage	Average yield per acre	Production	Price per pound received by producers Nov. 15
	1,000 acres	*Pounds*	*1,000 pounds*	*Cents*		*1,000 acres*	*Pounds*	*1,000 pounds*	*Cents*
1916	1,043	881.1	919,028	4.5	1922	1,005	630.0	633,114	4.7
1917	1,842	777.7	1,432,581	6.9	1923	896	722.9	647,762	6.8
1918	1,865	664.9	1,240,102	6.5	1924	1,187	627.7	745,059	[1] 4.6
1919	1,132	691.9	783,273	9.3	1925	958	729.1	698,475	[1] 3.6
1920	1,181	712.5	841,474	5.3	1926 [2]	852	735.8	626,866	[1] 4.5
1921	1,214	683.1	829,307	4.0					

Division of Crop and Livestock Estimates.

[1] Dec. 1, price.
[2] Preliminary.

TABLE 298.—*Peanuts: Acreage, production, and Dec. 1 price, by States, 1924–1926*

State	Acreage			Average yield per acre			Production			Price per pound received by producers, Dec. 1		
	1924	1925	1926 [1]	1924	1925	1926	1924	1925	1926 [1]	1924	1925	1926
	1,000 acres	*1,000 acres*	*1,000 acres*	*Lbs.*	*Lbs.*	*Lbs.*	*1,000 lbs.*	*1,000 lbs.*	*1,000 lbs.*	*Cts.*	*Cts.*	*Cts.*
Virginia	120	138	138	650	1,040	950	78,000	143,520	131,100	5.5	4.0	4.0
North Carolina	195	185	194	900	1,150	980	175,500	212,750	190,120	5.4	3.9	4.2
South Carolina	17	11	10	650	430	650	11,050	4,730	6,500	5.0	3.8	5.2
Georgia	399	278	211	600	500	525	239,400	139,000	110,775	4.2	3.4	5.8
Florida	47	41	27	710	600	550	33,370	24,600	14,850	4.0	3.2	5.6
Tennessee	23	20	19	788	815	850	18,124	16,300	16,150	3.5	3.4	3.5
Alabama	270	180	140	500	560	570	135,000	100,800	79,800	4.1	3.2	4.5
Mississippi	14	14	14	480	595	650	6,720	8,330	9,100	3.9	3.0	5.7
Arkansas	10	10	10	535	496	675	5,350	4,960	6,750	4.2	3.1	6.0
Louisiana	9	9	10	355	640	552	3,195	5,760	5,520	4.2	3.5	6.2
Oklahoma	8	7	8	700	700	857	5,600	4,900	6,856	4.3	3.2	5.7
Texas	75	65	71	450	505	695	33,750	32,825	49,345	4.5	3.4	4.5
United States	1,187	958	852	627.7	729.1	735.8	745,059	698,475	626,866	4.6	3.0	4.5

Division of crop and livestock estimates.

[1] Preliminary.

TABLE 299.—*Peanuts: Estimated price per pound, received by producers, United States, 1910–1926*

Year beginning November	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Weighted av.
Average:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1910–1913	4.6	4.6	4.5	4.7	4.8	4.9	4.9	5.1	5.0	5.0	5.0	4.6	4.6
1914–1920	5.9	5.7	5.9	6.1	6.2	6.4	6.7	6.8	6.8	6.4	6.3	5.7	5.9
1921–1925	5.4	4.9	5.2	5.5	5.7	5.7	5.7	5.8	5.7	5.6	5.7	5.3	5.2
1910	4.7	4.5	4.4	5.0	4.8	4.9	4.8	5.2	5.0	5.3	5.1	4.6	4.6
1911	4.4	4.4	4.3	4.7	5.0	4.9	4.9	5.2	4.9	5.0	4.8	4.7	4.4
1912	4.7	4.6	4.6	4.5	4.7	4.8	4.7	5.0	5.1	4.9	4.9	4.8	4.6
1913	4.4	4.8	4.7	4.7	4.7	4.9	5.1	5.1	5.2	4.9	5.0	4.5	4.6
1914	4.4	4.3	4.5	4.4	4.2	4.5	4.8	4.8	4.7	4.5	4.4	4.3	4.4
1915	4.2	4.2	4.3	4.4	4.4	4.6	4.6	4.7	4.6	4.6	4.4	4.4	4.3
1916	4.4	4.7	4.9	5.3	5.5	6.2	7.2	7.7	7.6	7.2	6.6	6.1	4.8
1917	7.1	7.1	7.0	7.2	7.4	8.3	8.2	7.9	7.8	7.9	8.3	6.9	7.1
1918	6.6	6.1	6.0	6.9	7.0	6.9	7.2	7.7	8.2	8.1	8.3	8.1	6.5
1919	9.1	9.1	9.9	10.5	11.2	10.9	11.2	11.2	11.0	8.5	8.0	5.8	9.2
1920	5.3	4.7	4.4	4.1	4.0	3.5	3.4	3.8	3.8	3.9	4.0	4.0	4.7
1921	3.7	3.5	3.6	4.0	4.3	3.9	3.9	4.2	4.4	4.4	4.7	3.6	3.7
1922	5.2	5.0	5.9	6.5	6.7	7.1	7.1	7.3	6.9	6.7	6.7	7.0	5.5
1923	6.8	6.2	6.4	6.7	6.8	6.7	6.4	6.5	6.4	6.6	6.4	6.4	6.5
1924	6.3	5.6	5.4	5.5	5.9	5.7	6.2	6.2	5.4	5.2	5.7	4.7	5.7
1925	5.1	4.4	4.5	4.7	4.6	5.1	5.0	4.7	5.3	5.3	5.1	4.9	4.7
1926	4.6	4.7	------	------	------	------	------	------	------	------	------	------	------

Division of Crop and Livestock Estimates.

TABLE 300.—*Peanuts: Monthly average prices of cleaned and shelled peanuts, f. o. b. important shipping points, November, 1920–October, 1926*

VIRGINIA-NORTH CAROLINA SECTION [1]

	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Cleaned Virginias, Jumbos:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1920–21	12¾	11⅛	11⅛	11	10⅝	10⅜	11	12	12	11⅞	11¾	11¾
1921–22	10⅛	8	7⅞	7⅛	6⅝	5⅞	5⅝	5⅛	5⅞	6	6	6⅝
1922–23	9¼	10¾	11¼	11	10¾	10⅝	10⅝	10⅜	10¼	9½	9½	9⅝
1923–24	9¼	8½	8⅝	8⅝	8½	8½	8⅝	8⅝	9½	10⅜	10⅜	10¼
1924–25	9⅞	9¾	10⅜	11½	11½	11⅜	11¼	11⅜	11½	11½	11½	10¾
1925–26	9¼	7⅞	7⅞	7⅞	7½	7¼	7⅞	7½	7¾	7¾	7½	7½
Fancys:												
1920–21	6⅞	5¾	6½	6⅝	6¼	6⅜	6⅝	7½	7⅛	7	6⅞	6⅞
1921–22	7	6⅝	7⅛	6⅝	6⅜	5⅝	5⅛	5	4⅞	5	4⅞	5
1922–23	7	7¾	7⅞	7⅞	7¾	7⅝	7½	7⅜	7	6⅝	6⅜	6¾
1923–24	6⅝	6⅞	7	7⅛	7	7	7¼	7⅜	8⅜	9⅛	9⅛	9
1924–25	8⅞	8⅞	9⅜	10⅜	10⅜	10¼	10⅛	10⅛	9⅝	9½	8⅝	7¾
1925–26	7⅛	6½	6⅝	6¾	6⅝	6⅜	6⅛	6½	6¾	6¾	6½	6⅜
Extras:												
1920–21	5¾	5	5	5	4⅝	4½	4⅝	5¼	4⅞	4¾	5	4⅞
1921–22	4⅞	4¼	4⅜	4¼	4⅛	3⅞	3¾	[illegible]	3⅞	4⅛	4⅛	4⅛
1922–23	5½	6	6⅝	6⅞	6⅞	6⅞	6⅞	6⅞	6⅝	6¼	6⅛	6¾
1923–24	6⅛	6	6⅛	6¼	6¼	6⅜	6⅜	6⅝	7⅜	8⅛	8⅛	8
1924–25	7⅝	7¾	7⅞	8⅝	8⅝	8⅜	8	7⅞	7⅞	7⅝	7	6¾
1925–26	6	5½	5½	5¾	5¾	5⅝	5⅜	5¾	5¾	6	6	5¾
Shelled Virginias, Extra Large:												
1920–21	12½	11⅝	12¼	12¾	12½	12⅜	12⅝	12⅜	12¼	12	12	11¾
1921–22	10⅝	8¾	8⅞	8½	8¾	8⅛	7¾	7½	7⅝	8⅜	8¼	8⅜
1922–23	9½	12	14½	13⅜	12¾	12½	12⅜	12¼	12	11½	11⅛	11⅜
1923–24	10⅞	9¾	10⅛	10⅜	10⅝	10⅝	10⅜	10⅝	11⅝	12¾	12⅝	12⅜
1924–25	12	11⅞	12¾	13¾	13¾	13½	13¼	13¼	13	12⅝	12½	11⅜
1925–26	9½	9	9¼	9⅜	9¼	9¼	9	9½	9⅞	9¾	9⅝	9¼
No. 1.												
1920–21	7¼	5⅛	5⅛	5	4⅝	4⅝	4¾	5⅛	4⅞	5½	7⅛	7½
1921–22	7	5⅞	5⅝	5⅜	5⅞	5½	5½	6⅛	6½	7¼	6¾	6⅝
1922–23	7⅜	8½	9¾	10⅜	10⅛	10¼	10⅜	10½	9¾	9	8⅞	9⅝
1923–24	9⅛	8¾	9	9¼	9⅜	9⅝	9⅜	9½	10¼	11⅝	11⅜	10⅝
1924–25	9½	8⅞	9⅛	9⅞	9¾	9½	9⅜	9⅜	9⅝	9½	9½	9
1925–26	7⅞	7¼	7½	8½	8⅜	8⅜	8⅛	9⅛	9½	9⅜	9⅛	8½
No. 2:												
1920–21	4⅜	3¾	3⅜	3½	3¼	2¾	2¾	2⅞	2⅝	3⅛	4¼	4¼
1921–22	4⅛	3¼	3½	3½	4½	4½	4½	5	5¼	5⅞	5½	5¼
1922–23	4⅞	6⅛	7¼	8⅝	8⅝	8⅝	9¼	9¼	8⅞	8	7⅝	8
1923–24	7⅞	7¼	7½	7¾	7⅝	7⅝	7⅜	7¼	7¾	8¼	8	7⅜
1924–25	6⅞	3⅛	6	6⅛	5⅞	5½	5¼	5¼	4⅞	4¾	4¾	4½
1925–26	4¾	4¾	5⅜	6	7	7¼	7	7¼	7	6⅝	6	5¾

SOUTHEAST SECTION: SOUTH CAROLINA, GEORGIA, ALABAMA, AND FLORIDA [2]

	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Shelled Spanish, No. 1:												
1920–21	7¼	5⅝	5¾	5¾	4⅞	4⅞	4½	4½	4¼	4⅞	5⅞	5⅞
1921–22	5⅜	5	5⅛	5½	6	5⅞	6⅛	7⅛	7¾	8¼	7½	6⅞
1922–23	9¼	9½	10¾	11¾	11¾	12⅛	12½	12⅝	12¾	12½	12¼	11⅞
1923–24	11¾	11½	11¾	11¾	11⅜	11⅛	11	11	11⅝	12⅛	10⅜	8¾
1924–25	8¼	8⅛	8⅛	8½	8¾	8	7¾	7¾	7½	7⅜	7¼	6¾
1925–26	6¾	6⅝	7⅝	8⅜	8½	8¼	8⅜	9	9¼	9¼	9⅜	8⅜
Spanish, No. 2:												
1920–21	5⅛	4⅛	4¼	4	3¼	3¼	2⅞	3⅛	2¾	3⅞	4¼	4⅜
1921–22	4⅛	3¾	3⅞	4¼	5¼	5¼	5¼	5⅞	6⅝	6⅞	6½	5⅝
1922–23	7⅝	7¾	9⅛	9¾	9⅞	10⅜	10¾	10½	10¼	9⅝	9⅛	10⅛
1923–24	10½	10½	10⅜	10⅝	10⅛	9¾	9	8¼	8⅝	9¼	8¼	7⅜
1924–25	7¼	7	6⅞	6⅞	6⅝	5¾	5¾	5⅞	5⅝	6	6	5⅝
1925–26	5¾	5⅝	6⅛	7⅜	7⅝	7⅜	7¼	7¾	7⅝	7⅜	7½	7½
Runners, No. 1:												
1920–21	5½	4¼	4¼	4	3¼	3¼	3	3¼	3⅜	4⅝	5	5
1921–22	4¾	4⅜	4⅝	5⅛	5⅞	5¾	5⅝	6½	6¼	6⅝	6¾	6⅝
1922–23	7½	7⅞	9⅛	9¾	9⅜	10⅛	10¼	10⅛	9⅞	9⅜	------	9⅛
1923–24	9	8⅝	9¼	9½	9	8½	8¼	8⅛	9¼	10⅛	9⅜	7¾
1924–25	7¼	7⅛	7¼	7¾	7⅝	7⅛	7	7¼	7⅜	7⅜	7⅜	6⅞
1925–26	6¾	6½	7	8	8	8	7¾	8¼	8¼	------	------	7½
Runners, No. 2:												
1920–21	4	3¾	3⅝	3⅜	2¾	2¾	2½	2⅝	2⅝	------	3⅞	4¼
1921–22	3⅝	3⅝	3⅝	3¾	5	------	------	------	------	4	5¾	------
1922–23	------	7	8⅛	8⅜	8⅝	9⅝	9⅝	9¼	8⅞	8½	------	8½
1923–24	8¼	7⅞	8¼	8¼	8	7½	7¼	7⅛	8¼	8⅞	7⅞	7⅛
1924–25	6½	6⅛	6	6⅜	6½	5¾	5¼	5⅝	5⅜	5⅝	5½	5¼
1925–26	5⅜	5¼	5½	6½	7	7⅛	7⅛	7⅛	7½	------	------	------

[1] Important shipping points: Suffolk, Franklin, Petersburg, and Norfolk, Va., Edenton and Enfield, N. C.

[2] Important shipping points: Albany, Donalsonville, Arlington, Savannah, Cordele, and Fort Gaines, Ga., Dothan, Enterprise, Samson, Troy, and Montgomery, Ala.

Table 300.—*Peanuts: Monthly average prices of cleaned and shelled peanuts, f. o. b. important shipping points, November, 1920–October, 1926*—Continued

TEXAS[3]

	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Shelled Spanish, No. 1:		*Cts.*		*Cts.*		*Cts.*	*Cts.*	*Cts.*			*Cts.*	*Cts.*
1920–21						5⅞	5⅞	6⅝				
1921–22						6¼	6¼	7⅝				
1922–23						12½	12⅝					
1923–24						11¼	11					
1924–25						9⅛	9					
1925–26						9	9					
Spanish, No. 2:												
1920–21						3¼	4					
1921–22						5¼	5¼					
1922–23						10½	10⅞					
1923–24						9⅝	9					
1924–25						7⅛	7¼					
1925–26						8	7⅞					

Division of Fruits and Vegetables.

[3] Important shipping points: Fort Worth and De Leon, Tex.

Table 301.—*Peanuts used in the production of oil, United States, 1918–1926*

[Thousand pounds—i. e., 000 omitted]

Year beginning July	July–September	October–December	January–March	April–June	Total
1918			[1] 230, 919	[1] 172, 280	
1919	11, 185	4, 364	5, 867	9, 214	30, 630
1920	15, 770	27, 414	27, 962	32, 923	104, 069
1921	23, 480	40, 338	44, 152	25, 964	133, 934
1922	4, 703	13, 169	9, 081	8, 436	35, 389
1923	941	6, 164	4, 676	5, 471	17, 252
1924	1, 928	17, 668	24, 678	16, 893	61, 167
1925 [2]	9, 096	17, 134	17, 880	10, 668	54, 778
1926 [2]	4, 389	11, 437			

Division of Statistical and Historical Research. Compiled from reports of the Bureau of the Census. Quantities reported in terms of "hulled" have been converted to "in-the-hull" basis by multiplying by 1.5.

[1] Peanuts "in the hull" and "hulled" not separately stated.
[2] Quarterly reports from January–December, 1926, subject to revision.

TABLE 302.—*Peanuts: International trade, average 1911–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Anglo-Egyptian Sudan		1,961		13,296		22,987	[1] 1	26,021
Brazil		274		4,492		435		[1] 195
British India		503,448		597,356		550,505		1,036,670
China	32,882	138,472	23,390	391,183	31,924	661,267	22,800	530,227
Dutch East Indies	612	60,282	577	39,876	511	43,099	([2] [3])	[2] 41,842
French Possessions in India		306,701		178,139		[1] 108		[1] 152
Gambia		131,912		140,143		[1] 135,792		[1] 109,087
Guinea (French)	1	4,863		3,459		[1] 2,768		[1] 9,036
Mozambique	[4] 1,098	[4] 15,907	35	24,346	56	29,669	5	24,525
Nigeria		17,163		51,267		175,316		284,986
Senegal	[4] 168	425,937	([1] [3])	637,647	[1] 4	[1] 701,707	[1] 47	[1] 983,828
Spain		9,205		8,790		7,395		4,574
Tanganyika		[5] 9,275		36,978		9,056		[1] 20,283
PRINCIPAL IMPORTING COUNTRIES								
Algeria	7,022	218	5,811	158	7,906	259	[1] 8,066	348
Argentina	8,667		4,485	12,125	554	2,883	4,967	326
Belgium	[4] 68,422	[4] 43,393			3,341	13	32,839	438
British Malaya	[5] 19,488	[5 6] 10,839	12,674	2,106	14,941	2,006	23,713	6,212
Canada	7,302		21,963		22,283		23,793	
Denmark	5,236		22,155		20,178		27,290	
Egypt	4,664	1,637	6,336	3,711	7,406	4,504	13,863	3,925
France	1,239,659	47,107	1,410,553	15,098	1,359,166	17,760	1,503,923	16,082
Germany	174,970	[7] 98	83,145		165,178		713,245	
Hongkong			49,511	39,837	60,265	41,277	[8] 27,728	[8] 17,655
Italy [9]	1,194	804	58,423	36	57,859	48	97,271	42
Japan		10,675	24,543	1,532	32,147	401	23,434	2,976
Netherlands	122,862	32,863	117,386	4,698	148,528	4,877	229,545	2,004
Philippine Islands	2,264		3,154		3,058		2,808	
Poland					[1] 6,078		[1] 5,439	
Sweden	[4 5] 20		4,071	([3])	2,554	([3])	[1] 10,065	
Tunis	[4] 1,459		[1] 3,248		3,369		3,836	
Union of South Africa	3,164	7	2,192	5	1,264	29	662	154
United Kingdom			224,548		226,216		358,959	
United States	20,988	6,804	76,484	4,806	88,915	3,127	120,158	3,489
Other countries	32,254	68,012	14,097	17,291	14,311	15,349	10,191	26,619
Total	1,754,396	1,847,857	2,168,781	2,228,375	2,278,012	2,432,637	3,264,648	3,151,696

Division of Statistical and Historical Research. Official sources except where otherwise noted. Includes shelled and unshelled, assuming the peanuts to be unshelled unless otherwise stated. When shelled nuts were reported, they have been reduced to terms of unshelled at the ratio of 3 pounds unshelled to 2 pounds shelled.

[1] International Yearbook of Agricultural Statistics.
[2] Java and Madura only.
[3] Less than 500 pounds.
[4] Two-year average.
[5] International Institute of Agriculture, Oleaginous Products and Vegetable Oils.
[6] Three-year average.
[7] One year only.
[8] Six months.
[9] Reports include some sesamum.

TABLE 303.—*Peanut oil: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1909–1913[1]		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
China	(²)	[3] 35, 593	(²)	62, 285	(²)	89, 636	(²)	78, 408
France	142	50, 967	1, 230	59, 332	3, 154	66, 384	3, 815	58, 416
Netherlands	2, 743	18, 569	6, 960	20, 170	19, 134	24, 281	40, 210	26, 336
United Kingdom	(²)	(²)	7, 170	11, 921	10, 980	21, 784	25, 148	25, 431
PRINCIPAL IMPORTING COUNTRIES								
Algeria	(²)	(²)	29, 510	646	30, 248	539	[4] 25, 589	[4] 460
Belgium	2, 233	2, 065	3, 642	4, 978	3, 678	4, 917	9, 187	5, 030
Canada			[5] 17, 708		26, 424		16, 134	
Czechoslovakia			93	3	[4] 959		1, 512	
Denmark	2, 941	[3] 156	1, 517	1, 309	828	2, 019	1, 890	[4] 1, 743
Dutch East Indies	[6] 2, 090	[6] 45	[4] 1, 450	[4] 57				
Germany	1, 602		7, 137	7, 363	13, 792	6, 141	23, 016	20, 551
Hongkong			33, 911	24, 942	41, 142	27, 691	[7] 20, 245	[7] 12, 984
Italy	8, 867	[3] 4	1, 347	29	8, 605	3	9, 168	105
Morocco	(²)		2, 983		2, 448		1, 894	
Norway	(²)	(²)	10, 727	903	7, 261		8, 449	
Philippine Islands	[3] 976	(²)	3, 011	(²)	3, 754	(²)	3, 286	
Sweden	2, 459		5, 985	534	6, 251	333	[4] 6, 755	667
United States	[8] 7, 295	(²)	8, 009	203	15, 395	39	3, 027	
Yugoslavia	[3] 273		[4] 217		[4] 257		[4] 3, 594	
Other countries	4, 103	413	4, 023	1, 414	5, 669	1, 302	7, 500	2, 718
Total	35, 724	107, 812	146, 630	196, 089	199, 979	245, 069	210, 419	232, 849

Division of Statistical and Historical Research. Official sources except where otherwise noted. Conversions made on the basis of 7.5 pounds to the gallon.

[1] International Institute of Agriculture, Oleaginous Products and Vegetable Oils.
[2] Not separately stated.
[3] Four-year average.
[4] International Yearbook of Agricultural Statistics.
[5] Includes some soy-bean oil.
[6] Two-year average.
[7] Six months.
[8] Three-year average.

TABLE 304.—*Peanut oil, refined: Average price per pound (in barrels), at New York, 1916–1926*

Year beginning September	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1916	12. 19	12 60	13. 33	13. 49	13. 50	14 38	14. 80	17. 58	17 83	17. 87	17. 44	18. 05	15. 26
1917	18 61	20 12	21. 67	22. 67	22. 49	22. 98	22. 33	22 41	21. 70	21. 15	21. 47	21. 78	21. 62
1918	21 44	22. 75	22. 75	21. 06	20. 36	20. 25	19. 90	22. 38	24. 58	26. 91	29. 31	30. 05	23. 48
1919	26. 25	25. 25	26. 68	26. 69	27. 50	26. 43	27. 12	25. 00	23. 10	20. 88	19. 00	17. 19	24. 26
1920	16. 88	16. 20	14. 62	12. 75	12. 52	12. 34	11. 00	10. 70	10. 50	10. 25	10. 00	10. 12	12. 32
1921	10. 62	11. 75	11. 59	11. 22	11. 25	11. 38	12. 25	13. 15	13. 00	13. 00	12. 48	12. 62	12. 03
1922	12. 40	12. 25	13. 03	14. 25	16. 88	17. 38	17. 85	17. 75	16 56	16. 00	16. 00	16. 00	15. 53
1923	16. 00	16. 00	15. 59	14. 80	14. 75	14. 75	14. 75	14. 75	14. 88	15. 25	15. 25	15. 56	15. 19
1924	16. 45	16. 25	16. 25	16. 25	16. 75	16. 75	16. 75	16. 75	15. 20	15. 00	15. 00	15. 00	16. 03
1925	15. 00	15. 00	15. 00	15. 00	15. 00	15. 50	16. 00	16. 00	16. 00	16. 00	16. 00	16. 00	15. 54
1926	16. 00	16. 00	15. 50	14. 62									

Division of Statistical and Historica Research. Compiled from Oil, Paint, and Drug Reporter average of weekly range.

TABLE 305.—*Sugar beets: Production, by States, 1924–1926: United States, 1914–1926*

State and year [1]	Acreage [2]			Quantity harvested	Yield per acre	Price per ton received by producers	Value
	Planted	Harvested					
		Area	Percentage of planted				
Ohio:	*Acres*	*Acres*	*Per cent*	*Short tons*	*Short tons*	*Dollars*	*Dollars*
1924	48, 000	41, 000	85. 42	315, 000	7. 68	9. 48	2, 986, 000
1925	42, 000	37, 000	88 10	376, 000	10 16	6. 88	2, 585, 000
1926 [3]	32, 000	30, 000	93. 75	293, 000	9. 77		
Michigan:							
1924	174, 000	150, 000	86. 21	1, 081, 000	7. 21	8 85	9, 569, 000
1925	137, 000	115, 000	83. 94	1, 122, 000	9. 76	7. 06	7, 923, 000
1926 [3]	127, 000	119, 000	93. 70	983, 000	8. 26		
Wisconsin:							
1924	27, 000	21, 000	77. 78	136, 000	6. 48	7. 02	955, 000
1925	18, 000	12, 000	66. 67	129, 000	10. 7[illegible]	7. 23	933, 000
1926 [3]	15, 000	13, 000	86. 67	116, 000	8. 92		
Nebraska:							
1924	67, 000	65, 000	97. 01	766, 000	11. 78	7. 53	5, 768, 000
1925	62, 000	59, 000	95. 16	934, 000	15. 83	5. 97	5, 580, 000
1926 [3]	84, 000	82, 000	97. 62	959, 000	11. 70		
Montana and Wyoming:							
1924	58, 000	54, 000	93. 10	564, 000	10. 44	8. 18	4, 613, 000
1925	62, 000	56, 000	90. 32	627, 000	11. 20	6. 28	3, 940, 000
1926 [3]	73, 000	69, 000	94. 52	992, 000	14. 38		
Idaho:							
1924	62, 000	39, 000	62. 90	267, 000	6. 85	7. 19	1, 920, 000
1925	40, 000	38, 000	95. 00	486, 000	12. 79	6. 23	3, 027, 000
1926 [3]	22, 000	17, 000	77. 27	124, 000	7. 29		
Colorado:							
1924	238, 000	225, 000	94. 54	2, 546, 000	11. 32	7. 59	19, 329, 000
1925	186, 000	136, 000	73 12	1, 717, 000	12. 62	5. 99	10, 279, 000
1926 [3]	217, 000	214, 000	98. 62	2, 906, 000	13. 58		
Utah:							
1924	98, 000	81, 000	82. 65	568, 000	7. 01	6. 92	3, 930, 000
1925	71, 000	67, 000	94. 37	1, 034, 000	15. 43	6. 03	6, 235, 000
1926 [3]	77, 000	52, 000	67. 53	391, 000	7. 52		
California:							
1924	93, 000	84, 000	90. 32	785, 000	9. 35	9. 14	7, 174, 000
1925	100, 000	76, 000	76 00	490, 000	6. 45	8. 20	4, 016, 000
1926 [3]	53, 000	48, 000	90. 57	395, 000	8. 23		
Other States:							
1924	60, 000	57, 000	95. 00	485, 000	8. 51	7. 24	3, 511, 000
1925	62, 000	57, 000	91. 94	508, 000	8. 91	5. 79	2, 940, 000
1926 [3]	52, 000	48, 000	92. 31	429, 000	8. 94		
United States:							
Average—							
1914–1920	759, 000	655, 000	86. 27	6, 459, 000	9. 87	8. 49	54, 851, 000
1921–1925	785, 000	694, 000	88. 41	6, 981, 000	10. 06	7. 47	52, 117, 000
1914	515, 000	483, 000	93. 94	5, 585, 000	11. 60	5. 45	30, 438, 000
1915	664, 000	611, 000	92. 02	6, 511, 000	10. 70	5. 67	36, 950, 000
1916	768, 000	665, 000	86. 57	6, 228, 000	9. 36	6. 12	38, 139, 000
1917	807, 000	665, 000	82. 43	5, 980, 000	9 00	7. 39	44, 192, 000
1918	690, 000	594, 000	86. 13	5, 949, 000	10. 01	10. 00	59, 494, 000
1919	890, 000	692, 000	77. 77	6, 421, 000	9. 27	11. 74	75, 420, 000
1920	978, 000	872, 000	89. 08	8, 538, 000	9. 79	11. 63	99, 324, 000
1921	882, 000	815, 000	92. 36	7, 782, 000	9. 55	6. 35	49, 392, 000
1922	606, 000	530, 000	87. 50	5, 183, 000	9. 77	7. 91	41, 017, 000
1923	732, 000	657, 000	89. 82	7, 006, 000	10. 66	8. 99	62, 965, 000
1924	925, 000	817, 000	88. 32	7, 513, 000	9. 20	7. 95	59, 755, 000
1925	780, 000	653, 000	83. 72	7, 423, 000	11. 37	6. 39	47, 458, 000
1926 [3]	752, 000	692, 000	92. 02	7, 588, 000	10. 97		

Division of Crops and Livestock Estimates.

[1] Acreage and production of beets are credited to the State in which the beets are made into sugar. Year shown is that in which beets were grown. Sugar-making campaign extends into succeeding year.

[2] The planted acreage is that covered by factory-contract agreements and understandings, all of which is not actually planted by growers. Therefore abandonment may not mean actual loss of acreage.

[3] Preliminary.

TABLE 306.—*Beet sugar: Production by States, 1924–1926, United States 1914–1926*

State and year [1]	Factories operating	Average length of campaign	Sugar produced (chiefly refined)	Beets sliced	Analysis of beets: Percentage of sucrose [2]	Analysis of beets: Purity coefficient [3]	Recovery of sucrose [4]: Percentage of total sucrose in beets	Recovery of sucrose [4]: Percentage of weight of beets: Sliced	Recovery of sucrose [4]: Percentage of weight of beets: Paid for	Loss of sucrose [5]
	Number	*Days*	*Short tons*	*Short tons*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Ohio:										
1924	5	59	45,000	297,000	17.85	85.20	84.87	15.15	14.29	2.70
1925	5	75	34,000	337,000	13.06	80.71	77.26	10.09	9.04	2.97
1926 [6]			31,000	293,000	12.97		81.57	10.58		2.39
Michigan:										
1924	16	70	165,000	992,000	18.55	86.75	89.65	16.63	15.26	1.92
1925	16	65	122,000	1,005,000	13.33	82.79	91.07	12.14	10.87	1.19
1926 [6]			127,000	983,000	15.46		83.57	12.92		2.54
Wisconsin:										
1924	4	66	18,000	128,000	17.19	85.36	81.79	14.06	13.24	3.13
1925	4	50	13,000	117,000	14.53	84.62	76.46	11.11	10.08	3.42
1926 [6]			13,000	116,000	13.79		81.29	11.21		2.58
Nebraska:										
1924	5	90	105,000	717,000	16.46	84.90	88.94	14.64	13.71	1.82
1925	5	115	110,000	876,000	14.38	82.76	87.34	12.56	11.78	1.82
1926 [6]			104,000	959,000	13.03		83.10	10.84		2.19
Montana and Wyoming:										
1924	4	92	81,000	517,000	17.21	85.77	91.05	15.67	14.36	1.54
1925	6	83	79,000	604,000	15.23	84.93	85.88	13.08	12.60	2.15
1926 [6]			130,000	992,000	15.22		86.07	13.10		2.12
Idaho:										
1924	8	34	38,000	252,000	17.06	87.06	88.39	15.08	14.23	1.98
1925	7	62	72,000	470,000	17.02	87.02	90.01	15.32	14.81	1.70
1926 [6]			16,000	124,000	16.14		79.93	12.90		3.24
Colorado:										
1924	16	93	364,000	2,403,000	16.65	84.70	90.99	15.15	14.30	1.50
1925	16	70	211,000	1,642,000	14.25	82.70	90.18	12.85	12.29	1.40
1926 [6]			371,000	2,906,000	14.90		85.70	12.77		2.13
Utah:										
1924	17	36	76,000	540,000	16.30	85.44	86.32	14.07	13.38	2.23
1925	15	67	135,000	990,000	15.86	84.20	86.00	13.64	13.06	2.22
1926 [6]			54,000	391,000	16.37		84.36	13.81		2.56
California:										
1924	8	77	131,000	783,000	18.26	83.24	91.62	16.73	16.69	1.53
1925	7	77	88,000	486,000	19.14	83.30	94.62	18.11	17.96	1.03
1926 [6]			73,000	395,000	19.49		94.82	18.48		1.01
Other States:										
1924	7	67	67,000	446,000	17.03	83.23	88.20	15.02	13.81	2.01
1925	7	62	49,000	466,000	13.30	78.97	79.10	10.52	9.65	2.78
1926 [6]			52,000	429,000	14.45		83.88	12.12		2.33
United States:										
Average—										
1914–1920	81	83	823,000	6,063,000	16.01	84.07	84.75	13.57	12.74	2.44
1921–1925	88	68	916,000	6,606,000	15.74	83.62	88.12	13.87	13.12	1.87
1914	60	85	722,000	5,288,000	16.38	83.89	83.33	13.65	12.93	2.73
1915	67	92	874,000	6,150,000	16.49	84.38	86.17	14.21	13.42	2.28
1916	74	80	821,000	5,920,000	16.30	84.74	85.03	13.86	13.18	2.44
1917	91	74	765,000	5,620,000	16.28	83.89	83.54	13.60	12.79	2.68
1918	89	81	761,000	5,578,000	16.18	84.70	84.30	13.64	12.79	2.54
1919	89	78	726,000	5,888,000	14.48	82.84	85.22	12.34	11.31	2.14
1920	97	91	1,089,000	7,991,000	15.99	83.96	85.24	13.63	12.75	2.36
1921	92	76	1,020,000	7,414,000	15.77	83.09	87.25	13.76	13.11	2.01
1922	81	58	675,000	4,963,000	15.44	83.76	88.15	13.61	13.02	1.83
1923	89	70	881,000	6,585,000	15.30	83.43	87.39	13.37	12.57	1.93
1924	90	66	1,090,000	7,075,000	17.19	85.03	89.65	15.41	14.51	1.78
1925	88	71	913,000	6,993,000	14.86	82.84	87.89	13.06	12.30	1.80
1926 [6]			971,000	7,588,000	15.00		85.33	12.80		2.20

Division of Crop and Livestock Estimates.

[1] Acreage and production of beets are credited to the State in which the beets are made into sugar. Year shown is that in which beets were grown. Sugar-making campaign extends into succeeding year.
[2] Based upon weight of beets sliced, except possibly in a very few factories.
[3] Percentage of sucrose (pure sugar) in the total soluble solids of the beets.
[4] Percentage of sucrose actually extracted by factories.
[5] Percentage of sucrose (based upon weight of beets) remaining in molasses and pulp.
[6] Preliminary.

TABLE 307.—*Cane sugar: Production in Louisiana, 1911–1926*

Year [1]	Factories in operation	Sugar production		Average sugar made per ton of cane	Cane used for sugar			Molasses made [3]	
		As made	Equivalent refined [2]		Acreage	Average per acre	Production	Total	Per ton of sugar
	Number	*Short tons*	*Short tons*	*Pounds*	*Acres*	*Short tons*	*Short tons*	*Gallons*	*Gallons*
Average:									
1914–1920	136	214, 104	199, 545	138	207, 849	14. 9	3, 092, 503	20, 671, 330	97
1921–1925	103	202, 000	188, 000	142	208, 000	13. 7	2, 844, 000	18, 247, 000	90
1911	188	352, 874	328, 879	120	310, 000	19	5, 887, 292	35, 062, 525	99
1912	126	153, 573	143, 130	142	197, 000	11	2, 162, 574	14, 302, 169	93
1913	153	292, 698	272, 795	139	248, 000	17	4, 214, 000	24, 046, 320	82
1914	149	242, 700	226, 200	152	213, 000	15	3, 199, 000	17, 177, 443	71
1915	136	137, 500	128, 200	135	183, 000	11	2, 018, 000	12, 743, 000	93
1916	150	303, 900	283, 200	149	221, 000	18	4, 072, 000	26, 154, 000	86
1917	140	243, 600	227, 000	128	244, 000	15. 6	3, 813, 000	30, 728, 000	126
1918	134	280, 900	261, 800	135	231, 200	18	4, 170, 000	28, 049, 000	100
1919	121	121, 000	112, 800	129	179, 900	10. 5	[illegible], 883, 000	12, 991, 000	107
1920	122	169, 127	157, 626	136	182, 843	13. 6	2, 492, 524	16, 856, 867	100
1921	124	324, 431	302, 370	155	226, 366	18. 5	4, 180, 780	25, 423, 341	78
1922	112	295, 095	275, 029	156	241, 433	15. 6	3, 778, 110	22, 718, 640	77
1923	105	162, 023	151, 005	136	217, 259	11. 1	2, 386, 650	15, 719, 400	97
1924	82	88, 000	82, 000	144	163, 000	7. 6	1, 228, 000	9, 590, 000	109
1925	91	139, 000	130, 000	105	190, 000	14. 0	2, 645, 000	17, 783, 000	128
1926 [4]		68, 900	63, 000	123	160, 000	6. 9	1, 104, 000	7, 509, 000	110

Division of Crop and Livestock Estimates.

[1] Sugar campaign, usually not ended before February following season of growth of cane.
[2] One ton of sugar as made is assumed to be equivalent to 0.932 ton of refined as tentatively recommended by the joint committee on sugar statistics of the Department of Commerce and the Department of Agriculture.
[3] Figures for molasses, 1911–1914, are as reported by the Louisiana Sugar Planters' Association, figures for later years as reported by Division of Crop and Livestock Estimates
[4] Preliminary.

TABLE 308.—*Cane sugar: Production of Hawaii, 1913–1926*

Island and year ended Sept. 30	Average length of campaign	Sugar production		Cane used for sugar			Total area in cane	Average extraction of sugar	
		As made	Equivalent refined [1]	Area harvested	Average yield per acre	Production		Percentage of cane	Per short ton of cane
	Days	*Short tons*	*Short tons*	*Acres*	*Short tons*	*Short tons*	*Acres*	*Per cent*	*Lbs.*
Hawaii:									
1924	201	228, 000	213, 000	49, 000	41	1, 996, 000	106, 000	11. 42	228
1925	170	263, 000	246, 000	54, 000	43	2, 321, 000	108, 000	11. 33	227
1926 [2]	193	278, 852	260, 950	55, 236	44	2, 441, 687	109, 063	11. 42	228
Kauai:									
1924	170	121, 000	113, 000	20, 000	49	986, 000	42, 000	12. 27	245
1925	134	134, 000	125, 000	24, 000	46	1, 111, 000	47, 000	12. 06	241
1926 [2]	156	135, 739	127, 025	23, 494	49	1, 152, 981	44, 796	11. 77	235
Maui.									
1924	166	155, 000	145, 000	19, 000	62	1, 170, 000	39, 000	13. 25	265
1925	141	170, 000	159, 000	20, 000	63	1, 258, 000	40, 000	13. 51	270
1926 [2]	158	158, 950	148, 745	19, 886	60	1, 185, 715	39, 518	13. 41	268
Oahu									
1924	211	187, 000	175, 000	23, 000	66	1, 509, 000	45, 000	12. 39	248
1925	146	202, 000	189. 000	24, 000	67	1, 607, 000	46, 000	12. 57	251
1926 [2]	191	213, 705	199, 985	23, 693	72	1, 715, 303	44, 397	12. 46	249

[1] One ton of sugar as made is assumed to be equivalent to 0.9358 tons of refined, as tentatively recommended by the joint committee on sugar statistics of the Department of Commerce and the Department of Agriculture.
[2] 1926 data collected through the Hawaiian Sugar & Planters' Association.

TABLE 308.—*Cane sugar: Production of Hawaii, 1913–1926*—Continued

Island and year ended Sept. 30	Average length of campaign	Sugar production: As made	Sugar production: Equivalent refined	Cane used for sugar: Area harvested	Cane used for sugar: Average yield per acre	Cane used for sugar: Production	Total area in cane	Average extraction of sugar: Percentage of cane	Average extraction of sugar: Per short ton of cane
Territory of Hawaii:	*Days*	*Short tons*	*Short tons*	*Acres*	*Short tons*	*Short tons*	*Acres*	*Per cent*	*Lbs.*
Average:									
1914–1920	184	604,024	565,246	116,974	42	4,890,918	[2] 249,305	12.35	247
1921–1925	183	622,116	582,176	116,820	45	5,252,600	234,700	11.84	237
1914	183	612,000	573,000	112,700	43	4,900,000	----------	12.49	250
1915	195	646,000	605,000	113,200	46	5,185,000	239,800	12.46	249
1916	180	592,763	554,708	115,419	42	4,859,424	246,332	12.20	244
1917	190	644,663	603,276	123,900	42	5,220,000	245,100	12.35	247
1918	184	576,700	539,676	119,800	41	4,855,000	276,800	11.88	238
1919	178	600,312	561,772	119,700	40	4,744,000	239,900	12.65	253
1920	175	555,727	520,049	114,100	39	4,473,000	247,900	12.42	248
1921	202	521,579	488,094	113,100	41	4,657,000	236,500	11.20	224
1922	199	592,000	554,000	124,000	41	5,088,000	229,000	11.64	233
1923	167	537,000	503,000	114,000	40	4,560,000	235,000	11.77	235
1924	192	691,000	647,000	111,000	51	5,661,000	232,000	12.21	244
1925	154	769,000	720,000	122,000	52	6,297,000	241,000	12.21	244
1926 [1]	180	787,246	736,705	122,309	53	6,495,686	237,774	12.12	242

Division of Crop and Livestock Estimates.

[1] 1926 data collected through the Hawaiian Sugar & Planters' Association.
[2] 1915–1920 average.

TABLE 309.—*Sugar: Production in the United States and its possessions, 1909–1926*

Year beginning July	Beet sugar (chiefly refined)	Cane sugar (chiefly raw): Louisiana	Cane sugar (chiefly raw): Other States	Cane sugar (chiefly raw): Porto Rico	Cane sugar (chiefly raw): Hawaii	Cane sugar (chiefly raw): Philippine Islands [1]	Total
Average:	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
1909–1913	609,620	292,478	9,672	363,474	567,495	252,781	2,095,519
1914–1920	822,651	214,104	3,699	452,549	591,106	466,033	2,550,143
1909	512,469	320,526	11,200	346,786	517,090	140,783	1,848,854
1910	510,172	342,720	12,320	349,840	566,821	164,658	1,946,531
1911	599,500	352,874	8,000	371,076	595,038	205,046	2,131,534
1912	692,556	153,573	9,000	398,004	546,524	345,077	2,144,734
1913	733,401	292,698	7,840	351,666	612,000	408,339	2,405,944
1914	722,054	242,700	3,920	346,490	646,000	421,192	2,382,355
1915	874,220	137,500	1,120	483,590	592,763	412,274	2,501,467
1916	820,657	303,900	7,000	503,081	644,663	425,266	2,704,567
1917	735,207	243,600	2,240	453,794	576,700	474,745	2,516,286
1918	760,950	280,900	3,500	406,002	600,812	453,346	2,505,010
1919	726,451	121,000	1,125	485,071	555,727	466,912	2,356,286
1920	1,089,021	169,127	6,987	489,818	521,579	608,499	2,885,031
1921	1,020,489	324,431	3,270	408,325	592,000	533,189	2,881,704
1922	675,000	295,095	640	379,172	587,000	475,325	2,362,232
1923	881,000	162,023	2,800	447,570	691,000	529,091	2,713,484
1924	1,090,000	88,483	----------	660,000	769,000	779,510	3,386,993
1925	913,000	139,381	----------	609,800	787,246	607,856	3,056,783
1926 [2]	971,000	68,000	----------	612,550	[3] 799,700	----------	----------

Division of Statistical and Historical Research. Cane sugar production 1909–1910 from Willett & Gray; 1911 and subsequently from United States Department of Agriculture. Hawaiian production from Hawaiian Sugar Planters' Association. Figures for earlier years appear in previous issues of the Yearbook.

[1] Exports 1909–1911, production 1912 and subsequently. [2] Preliminary. [3] Unofficial.

TABLE 310.—*Sugar: Production, trade, and supply available for consumption in continental United States, 1909–1926*

IN TERMS OF RAW SUGAR

Year beginning July 1	Production [1]	Brought in from insular possessions [2]	Imports as sugar [3]	Domestic exports as sugar [4]	Exports in other forms [5]	Available for consumption [6]	
						Total	Per capita
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Pounds*
Average:							
1909–1913	957,491	1,004,493	2,068,427	45,502	17,317	3,967,591	84.0
1914–1920	1,102,153	1,072,288	2,847,575	547,406	46,538	4,428,072	86.0
1921–1925	1,187,693	1,495,517	3,854,633	441,588	-------	-------	-------
1909	882,630	927,752	1,934,754	72,382	24,351	3,648,403	79.7
1910	903,475	943,701	1,845,279	36,597	15,966	3,639 891	78.3
1911	1,005,337	1,187,663	1,832,424	50,380	15,160	3,959,883	83.9
1912	907,070	1,026,972	2,266,426	30,963	19,217	4,150,288	86.6
1913	1,088,844	936,376	2,463,252	37,190	11,892	4,439,489	91.3
1914	1,022,828	1,098,314,	2,529,963	302,641	[illegible]3,585	4,334,878	87.9
1915	1,078,407	1,102,057	2,689,067	882,864	12,213	3,974,453	79.4
1916	1,193,107	1,203,938	2,527,984	676,752	29,211	4,219,065	83.2
1917	1,068,437	975,684	2,344,816	305,429	46,131	4,037,377	98.5
1918	1,102,421	1,073,944	2,799,962	568,566	36,747	4,371,013	83.8
1919	903,060	975,735	3,812,955	776,502	98,386	4,816,862	91.1
1920	1,346,811	1,076,342	3,228,279	319,589	89,491	5,242,852	97.9
1921	1,424,726	1,340,867	3,940,777	1,085,349	31,397	5,589,624	103 0
1922	1,021,360	1,235,049	4,068,205	412,196	12,568	5,899,849	107.3
1923	1,111,898	1,274,870	3,436,955	152,883	24,617	5,646,223	101.4
1924	1,260,483	1,645,319	3,931,282	273,470	22,436	6,541,178	116.0
1925	1,120,000	1,981,482	3,895,947	325,804	-------	-------	-------
1926	1,066,000	-------	-------	-------	-------	-------	-------

IN TERMS OF REFINED SUGAR [7]

1921	1,325,906	1,260,894	3,686,397	1,009,377	29,182	5,234,638	96.5
1922	950,625	1,161,351	3,805,745	383,439	11,682	5,522,600	100.5
1923	1,034,615	1,198,777	3,214,883	142,217	22,943	5,283,115	94.9
1924	1,172,466	1,547,587	3,674,563	254,391	20,911	6,119,314	108.5
1925	1,042,903	1,859,332	3,634,323	303,073	-------	-------	-------

Division of Statistical and Historical Research. Trade figures, Bureau of Foreign and Domestic Commerce.

[1] Beet and cane sugar only.
[2] Duty free, from Hawaii, Porto Rico, and the Philippine Islands (Virgin Islands included 1917 and subsequently.
[3] No account taken of sugar imported in other forms. Imports from the Philippine Islands excluded, reexports deducted.
[4] Shipments to Hawaii and Porto Rico included. Direct exports to foreign countries from Hawaii and Porto Rico excluded.
[5] Sugar used in the manufacture of other commodoties for export on which drawback was paid.
[6] No account taken of stocks at the beginning or end of year.
[7] Raw sugar converted to refined by multiplying by the following factors: Cuba and Hawaii, 0.9358; Porto Rico, 0.9393; Philippines, 0.95; All others (Santo Domingo, British West Indies, Louisiana, etc.) 0.932.

TABLE 311.—*Sugar beets: Acreage, yield per acre and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*

Country	Acreage					Yield per acre					Production				
	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926, preliminary	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926, preliminary	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926, preliminary
NORTH AMERICA	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*1,000 short tons*	*1,000 short tons*	*1,000 short tons*	*1,000 short tons*	*1,000 short tons*
Canada	17	30	36	43	47	9.4	9.8	9.3	10.7	9.6	160	293	334	458	451
United States [2]	485	693	815	647	685	10.0	10.1	9.2	11.4	11.0	4,860	6,965	7,489	7,366	7,537
Total North America	502	723	851	690	732	10.0	10.0	9.2	11.3	10.9	5,020	7,258	7,823	7,824	7,988
EUROPE															
England and Wales	2	22	22	55	126	[3] 7.3	8.5	9.2	8.7	8.9	[3] 29	187	202	479	1,120
Sweden	78	94	102	100	8	13.3	12.2	9.9	14.6	13.2	1,036	1,151	1,008	1,458	106
Denmark	80	83	95	93	75	10.9	11.6	11.2	14.3	15.1	871	966	1,064	1,333	1,135
Netherlands	144	167	183	163	150	13.7	14.4	14.6	15.0	14.3	1,977	2,402	2,675	2,451	2,150
Belgium	146	170	201	179	153	12.3	12.8	13.7	13.3	12.5	1,793	2,173	2,744	2,389	1,906
France	612	412	503	537	513	10.7	10.9	12.7	11.0	9.5	6,544	4,472	6,369	5,921	4,889
Spain	[4] 114	206	443	193		[4] 10.2	7.7	5.2	10.3		949	1,588	2,312	1,979	
Italy	130	207	306	141	180	15.3	12.8	13.4	12.3	15.3	1,983	2,646	4,102	1,735	2,760
Switzerland	[3] 2	3	3	4	4	[3] 18.3	14.3	16.7	12.0	13.5	[3] 26	43	50	48	54
Germany	[6] 1,075	982	975	996	997	13.7	10.8	11.6	11.4	11.6	[6] 14,679	10,595	11,317	11,382	11,569
Austria	57	35	46	50	48	9.8	9.0	10.4	10.9	10.4	561	316	477	543	500
Czechoslovakia	716	629	748	760	686	11.5	11.5	12.3	13.2	9.9	8,238	7,229	9,231	10,003	6,821
Hungary	131	133	168	163	156	11.5	8.2	8.4	10.3	9.7	1,513	1,085	1,405	1,684	1,507
Yugoslavia	35	71	119	82		10.9	7.6	9.8	6.9		381	540	1,172	563	
Bulgaria	7	34	64	[7] 3	49	8.1	6.5	7.0	6.0	6.8	57	222	446	[7] 18	331
Rumania	[5] 72	99	133	159	204	[5] 9.3	7.1	7.2	6.8	6.5	[5] 668	702	962	1,089	1,324
Poland	431	326	404	425	457	10.7	9.0	8.8	9.6	9.0	4,611	2,926	3,539	4,064	4,106
Finland	(8)	2	1	3	5		6.0	6.0	6.3	8.4	(8)	12	6	19	42
Russia	1,484	677	860	1,190	1,350	7.2	4.7	3.7	6.4	5.1	10,636	3,171	3,213	7,618	6,944
Total European countries reporting for all periods listed	5,167	4,075	4,814	5,021	5,161	10.3	9.9	10.1	10.4	9.2	55,222	40,298	48,810	52,234	47,264

OCEANIA															
Australia	[5] 1	[5] 2	2			[5] 7.0	[5] 12.5	13.5			[5] 7	[5] 25	27		
Total all countries reporting for all periods listed	5,669	4,798	5,665	5,711	5,893	10.6	9.9	10.0	10.5	9.4	60,242	47,556	56,633	60,058	55,252
Estimated world total [9]	5,820	5,078	6,229	5,988							61,576	49,718	60,146	62,642	

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture except as otherwise stated.

[1] Figures for European countries are estimates for present boundaries.
[2] Principal producing States.
[3] Two-year average.
[4] Three-year average.
[5] Four-year average.
[6] One year only, 1912-13. According to statistics of the German Sugar Association the 1912-13 sugar-beet acreage and production was greater than any other year with the exception of production in 1913-14.
[7] No sugar was produced in Bulgaria in 1925 The beets produced were probably shipped to neighboring countries for sugar manufacture or used for other purposes.
[8] No sugar beets grown in Finland prior to 1918.
[9] Exclusive of acreage and production in minor producing countries for which no data are available.

Table 312.—*Sugar, raw, cane and beet: World production, 1909–10 to 1926–27*

Year [1]	Production in countries reporting all years	Estimated world total	Total European beet sugar	Chief producing countries: Cuba	India [2]	Java [3]	Germany [4]	Czechoslovakia
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
1909–10	15,951,490	16,831,000	6,598,712	2,020,871	2,480,700	1,368,755	2,146,817	----------
1910–11	17,883,181	18,828,000	8,407,415	1,661,465	2,587,100	1,411,275	2,770,000	----------
1911–12	16,931,377	17,904,000	6,628,923	2,123,502	2,744,900	1,616,599	1,551,797	----------
1912–13	19,504,737	20,367,000	8,884,675	2,719,961	2,861,500	1,550,274	2,901,564	----------
1913–14	20,008,966	21,005,000	8,709,590	2,709,460	2,573,200	1,615,944	2,885,752	----------
1914–15	19,694,669	20,878,000	8,128,018	2,921,984	2,736,000	1,548,668	2,720,635	----------
1915–16	17,764,364	18,874,000	5,644,337	3,398,385	2,949,000	1,454,030	1,678,402	----------
1916–17	17,373,954	18,593,000	4,443,528	3,421,597	3,093,000	1,796,558	1,721,250	----------
1917–18	18,861,939	20,293,000	4,664,962	3,889,966	3,839,000	2,008,521	1,726,483	----------
1918–19	17,413,368	18,791,000	3,867,311	4,490,902	2,752,000	1,960,118	1,297,050	[5] 714,490
1919–20	16,311,053	17,999,000	2,856,507	4,183,676	3,404,000	1,472,796	773,700	552,713
1920–21	17,729,100	19,563,000	4,115,784	4,406,413	2,825,000	1,681,338	1,194,729	796,957
1921–22	18,631,553	20,577,000	4,348,764	4,517,470	2,928,000	1,853,357	1,433,742	730,745
1922–23	19,012,212	20,861,000	4,991,306	4,083,483	3,410,000	1,989,170	1,603,933	811,323
1923–24	20,884,538	22,833,000	5,544,488	4,606,223	3,715,000	1,980,653	1,263,455	1,114,566
1924–25	24,390,375	26,755,000	7,734,208	5,812,068	2,854,000	2,202,295	1,723,600	1,574,494
1925–26	25,441,641	27,687,000	8,000,315	5,462,756	3,334,000	2,535,293	1,770,249	1,664,727
1926–27 [6]	24,025,814	26,189,000	7,378,203	5,040,000	3,593,000	2,193,362	1,794,300	1,132,051

Division of Statistical and Historical Research. Estimated world total sugar production for the period 1895–96 to 1908–1909 in Agriculture Yearbook, 1924, p. 808.

[1] Figures are for the crop years 1909–10 to 1926–27 for the countries in which the sugar harvesting begins in the fall months and is completed during the following calendar year except in the cane-sugar producing countries where the season begins in May or June and is completed in the same calendar year. Production in these countries is for the calendar years 1909 to 1926.
[2] The figures quoted are the production of gur, a low grade of sugar which is mostly consumed by the natives.
[3] All grades of sugar reduced to terms of head sugar.
[4] Figures for 1909–10 to 1917–18 are for pre-war boundaries.
[5] Bohemia, Moravia, and Silesia only.
[6] Preliminary.

Table 313.—*Sugar: Production in specified countries, average 1909–10 to 1913–14, 1921–22 to 1925–26, annual 1924–25 to 1926–27*

BEET SUGAR IN TERMS OF RAW SUGAR

Country	Average, 1909–10 to 1913–14 [1]	Average, 1921–22 to 1925–26	1924–25	1925–26	1926–27, preliminary
NORTH AMERICA	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Canada [2]	11,782	31,908	48,733	41,375	[3] 35,636
United States [2]	655,000	984,600	1,172,000	981,000	1,043,800
Total North America	666,782	1,016,508	1,220,733	1,022,375	1,079,436
EUROPE					
England and Wales	[4] 3,084	24,755	29,745	64,082	156,800
Sweden	153,739	175,542	149,116	225,419	23,000
Denmark	127,091	141,985	149,730	190,808	165,350
Netherlands [2]	246,341	324,257	352,355	330,277	292,110
Belgium	278,837	346,040	434,866	361,034	255,280
France [2]	807,887	606,675	867,562	781,055	758,021
Spain	115,727	197,586	280,908	268,900	[3] 287,000
Italy [2]	208,675	307,781	468,119	166,571	352,168
Switzerland	3,784	6,654	6,614	6,944	7,700
Germany	[5] 2,340,268	1,558,996	1,723,601	1,770,249	1,794,300

[1] Figures for Europe are estimates for present boundaries.
[2] Refined sugar in terms of raw.
[3] Unofficial estimate.
[4] Two-year average.
[5] One year only 1912–13. According to statistics of the German Sugar Association the 1912–13 sugar production was greater than any other year.

Table 313.—*Sugar: Production in specified countries, average 1909–10 to 1913–14, 1921–22 to 1925–26, annual 1924–25 to 1926–27*—Continued

BEET SUGAR IN TERMS OF RAW SUGAR—Continued

Country	Average, 1909–10 to 1913–14	Average, 1921–22 to 1925–26	1924–25	1925–26	1926–27, preliminary
EUROPE—continued	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Austria	79,528	53,302	82,800	86,139	80,505
Czechoslovakia	1,221,274	1,179,166	1,574,494	1,664,727	1,132,051
Hungary	175,783	139,878	222,838	183,123	200,000
Yugoslavia	41,459	65,059	140,414	74,700	104,700
Bulgaria	4,376	22,044	44,530	(6)	35,340
Rumania	[7] 88,245	76,698	98,379	114,829	[3] 154,000
Poland	702,626	444,591	605,493	643,743	655,000
Finland	(6)	1,435	667	2,400	4,013
Russia	1,557,114	453,825	501,977	1,065,315	920,865
Total Europe	[9] 8,155,838	6,126,269	7,734,208	8,000,315	7,378,203
OCEANIA					
Australia	[8] 1,030	[7] 3,128	3,379		
Total countries reporting for all periods listed	8,822,620	7,142,777	8,954,941	9,022,690	8,457,639
Estimated world total beet sugar [10]	8,824,000	7,146,000	8,971,000	9,026,000	8,478,000

CANE SUGAR (RAW)

Country	Average, 1909–10 to 1913–14	Average, 1921–22 to 1925–26	1924–25	1925–26	1926–27, preliminary
NORTH AMERICA, CENTRAL AMERICA, AND WEST INDIES					
United States	302,150	202,536	88,000	139,000	68,000
Hawaii	567,495	675,200	769,000	787,246	[3] 799,700
Porto Rico	363,474	500,976	660,003	609,800	612,550
Virgin Islands	9,613	4,917	8,047	[3] 6,343	[3] 6,720
Central America:					
Honduras		[7] 20,141	24,563		
Guatemala	8,998	24,959	26,896	28,169	36,960
Nicaragua	3,742	15,357	[3] 16,483	[3] 22,000	[3] 27,600
Salvador	[8] 18,084	[7] 21,500	22,000		
Mexico	163,388	179,150	185,297	214,618	[3] 196,000
West Indies (British):					
Antigua	12,919	13,395	19,036	[3] 14,300	[3] 20,000
Barbados	27,788	51,607	[3] 55,233	[3] 53,938	[3] 56,000
Jamaica	23,856	44,178	[3] 47,984	[3] 64,596	[3] 56,000
St. Christopher	13,252	14,006	17,431	[3] 18,346	[3] 15,700
Trinidad and Tobago	51,275	66,483	[3] 77,983	[3] 82,388	[3] 78,000
Cuba	2,287,052	4,896,400	5,812,068	5,462,756	5,040,000
Dominican Republic	[7] 104,664	281,571	345,728	394,033	[3] 375,000
Haiti	(11)	10,428	[3] 9,274	[3] 12,599	[3] 14,000
West Indies (French):					
Guadeloupe	40,810	31,893	43,000	35,000	[3] 39,000
Martinique	42,782	34,423	[3] 53,754	[3] 53,896	50,400
Total North and Central American countries reporting for all periods listed	4,023,258	7,047,479	8,235,217	7,990,028	7,491,630
EUROPE AND ASIA					
Spain	17,059	9,147	9,043	[3] 10,000	[3] 8,400
India	2,649,480	3,248,200	2,854,000	3,334,000	3,593,000
Formosa	192,299	475,032	532,823	553,848	465,230
Japan	75,718	[7] 97,782	112,016		[3] 96,700
Java	1,512,569	2,112,154	2,202,295	2,535,293	2,193,362
Philippine Islands	294,380	[7] 579,279	779,510	(12)	(12)
Total European and Asiatic countries reporting for all periods listed	4,371,407	5,844,533	5,598,161	6,433,141	6,259,992

[3] Unofficial estimate.
[6] No sugar produced.
[7] Four-year average.
[8] One year only.
[9] This average is larger than the 1909-10 to 1913-14 average of the figures quoted in Table 312, which refer to pre-war boundaries. The difference is mostly accounted for by the figure for Germany which in this table is an official figure for present boundaries for one year only, a year of an unusually large crop. See footnote 6. For pre-war boundaries as reported in Table 312 official figures are available for all five years. The balance of the difference is accounted for by the change in territory in Russia.
[10] Exclusive of production in minor producing countries, for which no data are available.
[11] Too small to report.
[12] Figures for the total crop are not yet avaialble. Trade reports place the 1925-26 commercial crop at 488,000 short tons, and the 1926-27 crop at 582,000 short tons.

TABLE 313.—*Sugar: Production in specified countries, average 1909–10 to 1913–14, 1921–22 to 1925–26, annual 1924–25 to 1926–27*—Continued

CANE SUGAR (RAW)—Continued

Country	Average, 1909–10 to 1913–14	Average, 1921–22 to 1925–26	1924–25	1925–26	1926–27, preliminary
SOUTH AMERICA	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Argentina	193,853	288,008	274,127	433,968	529,000
Brazil	[13] 332,813	909,079	916,543	996,901	[3] 700,000
British Guiana	[13] 112,312	112,297	101,780	120,490	[3] 106,000
Dutch Guiana	13,235	11,875	9,996	[3] 11,000	[3] 14,600
Ecuador	6,289	18,400	[3] 21,000	[3] 23,000	[3] 20,000
Peru	202,518	339,315	345,025	[3] 297,000	[3] 308,000
Total South America	861,020	1,678,974	1,668,471	1,882,359	1,677,600
AFRICA					
Egypt	67,127	100,261	88,268	105,620	[3] 101,000
Mauritius	233,671	243,067	247,698	265,897	239,000
Union of South Africa	88,165	182,341	161,253	239,463	[3] 242,510
Portuguese East Africa	26,460	49,937	[3] 49,591	[3] 44,000	[3] 65,256
Reunion	41,653	51,805	57,904	65,179	[3] 55,000
Total Africa	457,076	627,411	604,714	720,159	702,766
OCEANIA					
Australia	216,331	411,942	478,606	581,646	[3] 468,000
Fiji	84,629	71,984	71,477	113,000	[3] 95,000
Total Oceania	300,960	483,926	550,083	694,646	563,000
Total cane sugar producing countries reporting for all periods listed	10,013,721	15,682,323	16,656,646	17,729,333	16,694,988
Estimated world total cane sugar [10]	10,473,000	16,597,000	17,784,000	18,661,000	17,711,000
Total world cane and beet-sugar production in countries reporting all periods listed	18,836,341	22,825,100	25,611,587	26,752,023	25,152,627
Estimated world total beet and cane sugar [10]	19,297,000	23,743,000	26,755,000	27,687,000	26,189,000

Division of Statistical and Historical Research. Official sources and International Institute of Agriculture except as otherwise stated. Figures are for the crop years 1909–10 to 1926–27 for the countries in which the sugar harvesting season begins in the fall months and is completed during the following calendar years, except in the case of cane-sugar producing countries where the season begins in May or June and is completed in the same calendar year. Production in these countries is for the calendar years 1909 to 1926.

[3] Unofficial estimate.
[10] Exclusive of production in minor producing countries, for which no data are available.
[13] Three-year average.

TABLE 314.—*Sugar: International trade, average 1909–1913, annual 1923–1925*

Country	Year ended Dec. 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Australia	76,233	268	[1] 588	[1] 11,121	[1] 3,412	[1] 89,893	--------	--------
Austria-Hungary	3,942	848,830	--------	--------	--------	--------	--------	--------
Belgium	7,892	154,476	66,579	164,908	65,712	177,693	66,925	231,094
Brazil	[2] 117	38,284	([3])	168,844	1,522	37,992	22	3,507
British Guiana	[2] 6,112	106,196	323	93,147	309	96,204	436	109,455
Cuba	656	2,009,899	8,313	3,818,889	8,923	4,379,014	--------	[4] 5,531,543
Czechoslovakia	--------	--------	43	519,484	42	734,896	--------	912,498
Dominican Republic	[5] 766	92,351	164	186,946	501	243,227	578	331,972
Dutch East Indies	3,562	1,412,555	2,851	2,014,473	3,631	2,070,679	[6] 178	[6] 2,279,156
Fiji	[7] 386	78,817	119	49,401	133	49,809	121	102,753

[1] Year beginning July 1.
[2] Four-year average.
[3] Less than half a ton.
[4] Revista Azucarera de H. A. Himely.
[5] One year only.
[6] Java and Madura only.
[7] Three-year average.

TABLE 314.—*Sugar: International trade, average 1909–1913, annual 1923–1925*—Continued

Country	Year ended Dec. 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES—continued	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Formosa	554	5, 744	26, 193	10, 646	20, 167	27, 702		
Germany	3, 486	873, 161	5, 824	19, 513	50, 412	418, 477	125, 202	125, 868
Guadeloupe	195	37, 635	33	25, 795		29, 388		
Hongkong			336, 667	356, 748	418, 337	336, 631	[8] 108, 779	[8] 148, 966
Hungary			902	49, 162	887	106, 066		93, 376
Jamaica	395	14, 494		28, 861		38, 776		
Martinique	230	42, 555	15	25, 280				
Mauritius	[3] 2	226, 255	181	246, 704	[illegible]	201, 437		
Netherlands	82, 721	200, 490	162, 528	232, 844	258, 223	293, 091	363, 750	417, 007
Peru	726	146, 736	16	311, 391	277	292, 671	350	229, 432
Philippine Islands	3, 950	179, 432	4, 985	290, 807	3, 741	394, 436	1, 103	602, 773
Poland			1, 571	104, 871	123	271, 498	206	216, 035
Reunion	[7] 2	41, 658		39, 377		47, 458		
Russia	3, 744	293, 514						
Salvador		2, 935	1	10, 188	3	6, 004		2, 792
Trinidad and Tobago	522	43, 755	893	39, 786	945	48, 632	1, 129	67, 930
Union of South Africa	29, 694	675	2, 972	32, 274	537	9, 375	5, 946	59, 970
Venezuela	[6] 285	2, 181	27	21, 931	23	10, 369	36	12, 302
PRINCIPAL IMPORTING COUNTRIES								
Algeria	37, 908		42, 922	501	47, 520	5	54, 008	5
Anglo-Egyptian Sudan	13, 764		8, 609		14, 939		15, 129	
Argentina	51, 690	72	27, 089	1	7, 329	112	80, 744	115
Austria			89, 220	226	112, 731	372	106, 113	1, 013
British India	715, 990	26, 611	559, 541	22, 221	624, 650	23, 011	[9] 841, 497	[9] 754
British Malaya	[10]	[10]	90, 846	29, 203	102, 131	39, 979	126, 488	42, 458
Canada	297, 893	820	432, 791	60, 974	435, 482	43, 550	594, 397	155, 161
Chile	84, 965	90	88, 437	117	88, 752	229	121, 401	
China	343, 622	14, 933	407, 269	24, 207	618, 019	10, 005	795, 323	4, 789
Denmark	21, 814	22, 536	71, 544	292	57, 610	519	27, 628	1, 490
Egypt	43, 020	8, 086	5, 022	49, 904	48, 797	31, 095	91, 462	18, 708
Estonia			16, 024	3	17, 491		20, 218	
Finland	50, 077		54, 528		74, 279		122, 397	
France	186, 198	206, 897	552, 298	135, 972	519, 085	160, 966	356, 936	194, 763
Greece	11, 718		38, 813		62, 289			
Irish Free State					86, 466		98, 408	
Italy	9, 249	302	39, 730	2, 339	50, 662	27, 201	100, 627	10, 752
Japan	176, 942	60, 204	333, 762	71, 207	339, 519	127, 274	423, 478	163, 342
Morocco	61, 402		75, 939		83, 151		110, 558	
New Zealand	62, 962	[3] 13, 478	72, 139	380	70, 920	372	78, 229	411
Norway	52, 326		63, 428		83, 837		73, 916	
Persia	109, 352	[3] 557	58, 867	38	74, 496	68		
Portugal	39, 631		53, 881		62, 155			
Spain	45	63	812	8	28, 990	68	1, 020	5
Sweden	1, 672	1	27, 626	1	81, 693	1	48, 987	1
Switzerland	118, 201		109, 910	36	137, 037	68	142, 230	63
United Kingdom	1, 853, 605	32, 603	1, 694, 865	58, 667	1, 946, 416	81, 121	2, 365, 653	73, 832
United States	2, 122, 517	39, 684	3, 854, 668	222, 458	4, 137, 873	220, 248	4, 459, 766	379, 358
Other countries	432, 325	192, 238	157, 359	196, 587	216, 581	82, 780	229, 461	65, 411
Total	7, 125, 060	7, 472, 071	9, 644, 727	9, 757, 733	11,068,7[illegible]1	11,260,462	12,155,535	12,590,910

Division of Statistical and Historical Research. Official sources except where otherwise noted.
The fol[illegible] under the head of sugar: Brown, white s[illegible]
caramel, [illegible]
Candy (meaning confectionery),

[3] Four-year average.
[6] One year only.
[7] Three-year average.
[8] Six months.
[9] Sea trade only.
[10] Not available.

TABLE 315.—*Sugar, raw (96° centrifugal): Average wholesale price per pound, New York, 1909–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.[1]
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1909–1913	3.9	3.9	4.0	3.9	3.9	3.8	4.0	4.2	4.5	4.3	4.2	4.1	4.1
1914–1920	6.2	6.1	6.3	7.3	7.8	7.6	7.4	7.2	6.8	6.4	6.2	6.2	6.8
1921–1925	5.1	5.4	5.8	5.6	5.4	5.1	5.2	5.2	5.3	5.4	5.4	5.2	5.3
1909	3.7	3.6	3.8	3.9	3.9	3.9	3.9	4.1	4.2	4.3	4.4	4.2	4.0
1910	4.1	4.2	4.4	4.3	4.3	4.2	4.3	4.4	4.3	3.9	3.9	4.0	4.2
1911	3.6	3.5	3.8	3.9	3.9	3.9	4.8	4.9	5.9	5.9	5.1	4.8	4.5
1912	4.4	4.6	4.5	4.1	4.0	3.9	3.9	4.1	4.3	4.1	4.0	4.0	4.2
1913	3.5	3.5	3.5	3.4	3.3	3.3	3.6	3.7	3.7	3.5	3.6	3.4	3.5
1914	3.3	3.4	3.0	3.0	3.2	3.3	3.3	5.7	5.8	4.4	3.9	3.9	3.8
1915	4.1	4.7	4.8	4.8	4.8	4.9	4.9	4.8	4.3	4.1	4.8	4.9	4.7
1916	4.6	4.9	5.6	6.2	6.4	6.3	6.3	5.6	5.6	6.3	6.2	5.3	5.8
1917	5.2	5.2	5.5	6.2	6.1	6.0	6.6	7.3	7.0	6.9	6.9	6.3	6.3
1918	6.0	6.0	6.0	6.0	6.0	6.0	6.1	6.1	7.0	7.3	7.3	7.3	6.4
1919	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	10.2	7.5
1920	13.0	11.4	11.9	17.7	20.8	19.7	17.6	13.4	10.7	8.3	6.8	5.3	13.0
1921	5.4	5.3	6.1	5.4	4.9	4.2	4.4	4.7	4.3	4.2	4.1	3.7	4.7
1922	3.6	3.8	3.9	4.0	4.1	4.6	5.2	5.2	4.8	5.4	5.6	5.7	4.7
1923	5.3	6.2	7.3	7.8	7.9	7.4	6.9	6.1	7.0	7.6	7.8	7.8	7.0
1924	6.7	7.2	6.9	6.4	5.6	5.1	5.1	5.4	6.0	6.0	5.8	5.3	6.0
1925	4.6	4.6	4.7	4.5	4.3	4.4	4.3	4.4	4.3	3.9	4.0	4.1	4.3
1926	4.2	4.2	4.0	4.1	4.2	4.1	4.2	4.2	4.4	4.6	4.7	5.1	4.3

Division of Statistical and Historical Research. Compiled from Bureau of Labor Statistics reports. Data for 1890–1908 are available in 1924 Yearbook, p. 810, Table 388.

[1] Derived from the figures upon which the monthly averages are based.

TABLE 316.—*Sugar, granulated: Average wholesale price per pound, New York 1909–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.[1]
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1909–1913	4.8	4.7	4.8	4.8	4.8	4.7	4.9	5.0	5.2	5.1	4.9	4.8	4.9
1914–1920	7.5	7.6	7.6	------	------	------	------	8.6	8.3	7.8	7.6	7.6	------
1921–1925	6.7	6.8	7.2	7.0	6.8	6.6	6.5	6.4	6.5	6.6	6.6	6.6	6.7
1909	4.5	4.4	4.6	4.8	4.8	4.7	4.7	4.8	4.9	4.9	5.0	4.9	4.8
1910	4.9	4.9	5.2	5.1	5.2	5.0	5.1	5.1	5.0	4.8	4.6	4.7	5.0
1911	4.7	4.6	4.7	4.7	4.8	4.9	5.1	5.7	6.6	6.6	6.1	5.6	5.3
1912	5.4	5.5	5.5	5.1	4.9	5.0	4.9	4.9	5.0	4.8	4.8	4.8	5.1
1913	4.5	4.2	4.2	4.1	4.1	4.1	4.5	4.6	4.5	4.2	4.2	4.1	4.3
1914	3.9	3.9	3.8	3.7	4.0	4.2	4.2	6.5	6.8	5.9	4.9	4.8	4.7
1915	4.9	5.5	5.7	5.8	5.9	5.9	5.8	5.5	5.1	5.0	5.7	5.9	5.6
1916	5.7	6.0	6.6	7.1	7.5	7.4	7.5	7.0	6.4	7.1	7.4	6.9	6.9
1917	6.6	6.9	7.1	8.2	7.9	7.5	7.5	8.2	8.2	8.2	8.2	8.0	7.7
1918	7.4	7.3	7.3	7.3	7.3	7.3	7.4	7.4	8.5	8.8	8.8	8.8	7.8
1919	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	10.9	8.9
1920	15.4	15.0	13.7	[2] 19.2	[2] 22.5	[2] 21.2	[2] 19.1	16.7	14.3	10.8	9.6	8.1	------
1921	7.6	7.1	7.8	7.3	6.3	5.7	5.5	5.8	5.6	5.2	5.2	5.0	6.2
1922	4.8	4.9	5.2	5.2	5.3	5.9	6.6	6.7	6.3	6.6	6.8	6.9	5.9
1923	6.7	7.3	8.6	9.2	9.4	9.2	8.5	7.6	8.2	9.0	8.7	8.8	8.4
1924	8.4	8.7	8.5	7.9	7.3	6.5	6.6	6.6	7.1	7.3	7.3	7.2	7.4
1925	6.1	5.8	5.9	5.6	5.5	5.5	5.3	5.4	5.4	5.0	5.1	5.3	5.5
1926	5.1	5.2	4.9	5.2	5.5	5.4	5.6	5.5	5.6	5.7	5.8	6.1	5.5

Division of Statistical and Historical Research. Compiled from Bureau of Labor Statistics reports. Data for 1890–1908 are available in 1924 Yearbook, p. 811, Table 390.

[1] Derived from the figures upon which the monthly averages are based.
[2] No quotations. Prices shown estimated by Bureau of Labor Statistics by applying manufacturing differential to prices of raw sugar.

TABLE 317.—*Sugar, granulated: Average retail price per pound, United States, 1913–1926*

Year	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1914–1920	9.1	9.5	9.5	9.9	10.8	10.9	11.0	10.9	10.1	9.6	9.6	9.5	10.0
1921–1925	8.5	8.4	8.9	8.9	8.5	8.3	8.1	8.1	8.1	8.2	8.1	8.1	8.4
1913	5.8	5.5	5.4	5.4	5.4	5.3	5.5	5.6	5.7	5.5	5.4	5.4	5.5
1914	5.2	5.2	5.1	5.0	5.0	5.1	5.2	7.9	8.0	7.2	6.2	6.1	5.9
1915	6.0	6.5	6.6	6.7	6.8	6.9	7.0	6.7	6.5	6.1	6.6	6.8	6.6
1916	6.7	6.9	7.5	8.0	8.6	8.7	8.8	8.5	7.7	8.2	8.6	8.3	8.0
1917	8.0	8.1	8.8	9.6	10.1	9.4	9.2	10.0	9.9	9.8	9.6	9.5	9.3
1918	9.5	10.6	9.2	9.1	9.1	9.1	9.2	9.3	9.6	10.6	10.8	10.8	9.7
1919	10.8	10.7	10.6	10.6	10.6	10.6	10.9	11.1	11.0	11.4	12.5	14.5	11.3
1920	17.8	18.8	18.7	20.2	25.4	26.7	26.5	22.9	18.3	13.9	12.8	10.5	19.4
1921	9.7	8.9	9.7	9.7	8.4	7.8	7.1	7.5	7.3	6.9	6.7	6.5	8.0
1922	6.2	6.4	6.5	6.7	6.6	7.1	7.6	8.1	7.9	7.9	8.1	8.3	7.3
1923	8.3	8.7	10.2	10.6	11.2	11.1	10.5	9.6	9.6	10.6	10.3	10.4	10.1
1924	10.2	10.3	10.4	9.9	9.2	8.3	8.4	8.2	8.[illegible]	8.8	8.8	8.8	9.2
1925	8.1	7.7	7.7	7.5	7.2	7.2	7.1	7.0	[illegible].0	6.8	6.6	6.7	7.2
1926	6.7	6.7	6.7	6.6	6.7	6.9	6.9	7.0	7.0	7.1	7.1	7.3	6.9

Division of Statistical and Historical Research. Compiled from Bureau of Labor Statistics reports.

TABLE 318.—*Sugar-cane sirup: Acreage, production, and farm price, by States, 1924, 1925, and 1926*

State	Acreage used for sirup			Yield per acre			Production			Price per gallon received by producers Dec. 1		
	1924	1925	1926[1]	1924	1925	1926[1]	1924	1925	1926[1]	1924	1925	1926[1]
	1,000 acres	*1,000 acres*	*1,000 acres*	*Gallons*	*Gallons*	*Gallons*	*1,000 gallons*	*1,000 gallons*	*1,000 gallons*	*Cents*	*Cents*	*Cents*
South Carolina	10	8	5	125	72	140	1,250	576	700	87	100	90
Georgia	30	32	35	125	110	175	3,750	3,520	6,125	95	100	75
Florida	9	10	10	200	210	210	1,800	2,100	2,100	100	105	85
Alabama	20	22	20	106	140	165	2,120	3,080	3,300	110	110	90
Mississippi	8	14	14	55	172	205	440	2,408	2,870	135	105	95
Arkansas	3	3	3	70	120	135	210	360	405	110	120	105
Louisiana	47	25	29	202	262	140	9,512	6,541	4,068	100	72	95
Texas	13	11	11	82	165	196	1,066	1,815	2,156	125	130	95
United States	140	125	127	144	163	171	20,148	20,400	21,724	102	97	88

Division of Crop and Livestock Estimates.

[1] Preliminary.

SORGO FOR SIRUP

TABLE 319.—*Sorgo for sirup: Acreage, production, and December 1 price, United States, 1917–1926*

Year	Acreage	Average yield per acre	Production	Price per gallon received by producers Dec. 1	Year	Acreage	Average yield per acre	Production	Price per gallon received by producers Dec. 1
	1,000 acres	*Gallons*	*1,000 gallons*	*Cents*		*1,000 acres*	*Gallons*	*1,000 gallons*	*Cents*
1917	415	90.3	37,472	69.5	1922	447	81.5	36,440	71.0
1918	422	79.2	33,387	93.4	1923	380	84.2	32,001	86.2
1919	487	80.9	39,413	110.8	1924	369	67.6	25,004	94.3
1920	536	92.4	49,505	106.9	1925	370	67.4	24,926	94.9
1921	518	88.0	45,566	62.9	1926[1]	403	89.3	35,977	84.5

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 320.—*Sorgo for sirup: Acreage, production, and December 1 price, by States, 1924–1926*

State	Acreage			Average yield per acre			Production			Price per gallon received by producers Dec. 1		
	1924	1925	1926 [1]	1924	1925	1926	1924	1925	1926 [1]	1924	1925	1926
	1,000 acres	*1,000 acres*	*1,000 acres*	*Gallons*	*Gallons*	*Gallons*	*1,000 gallons*	*1,000 gallons*	*1,000 gallons*	*Cents*	*Cents*	*Cents*
Ohio	4	4	4	75	72	72	300	288	288	115	125	120
Indiana	3	2	2	85	88	92	255	176	184	105	112	105
Illinois	9	12	14	75	77	78	675	924	1, 092	112	110	105
Wisconsin	2	2	2	54	70	66	108	140	132	120	135	140
Minnesota	2	2	2	56	71	80	112	142	160	108	115	120
Iowa	5	5	6	72	79	77	360	395	462	110	115	110
Missouri	22	22	25	81	76	78	1, 782	1, 672	1, 950	99	102	100
Nebraska	2	2	2	80	70	64	160	140	128	100	100	100
Kansas	4	5	3	75	50	58	300	250	174	98	102	95
Virginia	12	11	12	95	78	100	1, 140	858	1, 200	90	95	95
West Virginia	8	8	8	92	80	97	736	640	776	105	115	110
North Carolina	31	28	44	87	68	91	2, 697	1, 904	4, 004	90	98	90
South Carolina	21	20	22	62	39	77	1, 302	780	1, 694	80	92	75
Georgia	25	19	23	71	45	90	1, 775	855	2, 070	84	95	70
Kentucky	30	39	51	80	80	95	2, 400	3, 120	4, 845	97	96	80
Tennessee	30	28	32	73	68	93	2, 190	1, 904	2, 976	96	94	80
Alabama	35	42	36	50	70	100	1, 750	2, 940	3, 600	98	90	80
Mississippi	36	34	27	55	76	100	1, 980	2, 584	2, 700	93	75	70
Arkansas	36	38	38	58	68	77	2, 088	2, 584	2, 926	93	93	85
Louisiana	1	1	1	30	75	144	30	75	144	89	80	70
Oklahoma	16	14	14	68	76	83	1, 088	1, 064	1, 162	90	93	85
Texas	33	31	34	50	46	95	1, 650	1, 426	3, 230	92	93	80
New Mexico	2	1	1	63	65	80	126	65	80	106	110	100
United States	369	370	403	67. 8	67. 4	89. 3	25, 004	24, 926	35, 977	94. 3	94. 9	84. 5

Division of Crops and Livestock Estimates.

[1] Preliminary.

TABLE 321.—*Maple sugar and sirup: Production by States, 1924–1926, United States, 1917–1926*

State and year	Trees tapped	Sugar made	Sirup made	Total product in terms of sugar [1]	Average per tree: As sugar [1]	Average per tree: As sirup [1]
	Thousand	*Thousand pounds*	*Thousand gallons*	*Thousand pounds*	*Pounds*	*Gallons*
Maine:						
1925	320	22	51	430	1. 34	0. 17
1926	304	29	61	517	1. 70	. 21
New Hampshire:						
1925	798	227	161	1, 516	1. 90	. 24
1926	790	233	198	1, 817	2. 30	. 29
Vermont:						
1925	5, 554	1, 794	956	9, 442	1. 70	. 21
	5, 554	1, 602	980	9, 442	1. 70	. 21
Massachusetts:						
1925	272	126	56	571	2. 10	. 26
1926	272	128	86	816	3. 00	. 38
New York:						
1925	3, 998	624	896	7, 792	1. 95	. 24
1926	3, 958	1, 168	1, 128	10, 192	2. 58	. 32
Pennsylvania:						
1925	696	208	191	1, 736	2. 49	. 31
1926	696	223	251	2, 231	3. 21	. 40
Ohio:						
1925	1, 747	122	341	2, 850	1. 63	. 20
1926	1, 700	68	578	4, 692	2. 76	. 34
Indiana:						
1925	515	10	148	1, 194	2. 32	. 29
1926	533	8	163	1, 312	2. 46	. 31

[1] 1 gallon of sirup taken as equivalent to 8 pounds of sugar.

TABLE 321—*Maple sugar and sirup: Production by States, 1924–1926, United States, 1917–1926*—Continued

State and year	Trees tapped	Sugar made	Sirup made	Total product in terms of sugar	Average per tree: As sugar	Average per tree: As sirup
	Thousand	*Thousand pounds*	*Thousand gallons*	*Thousand pounds*	*Pounds*	*Gallons*
Michigan:						
1925	838	75	179	1,507	1. 80	. 22
1926	863	100	300	2,500	2. 90	. 36
Wisconsin:						
1925	575	28	110	908	1. 58	. 20
1926	575	18	155	1,258	2. 19	. 27
Total, 10 States [2]	-------	-------	-------	-------	-------	-------
Average:						
1917–1920	18,535	10,145	4,126	43,155	2. 33	. 29
1921–1925	15,480	4,375	3,325	30,972	2. 00	. 25
1917	17,313	10,525	4,258	44,589	2. 58	. 32
1918	19,132	12,944	4,863	[illegible],848	2. 71	. 34
1919	18,799	9,787	3,804	40,219	2. 14	. 27
1920	18,895	7,324	3,580	35,964	1. 90	. 24
1921	15,114	4,730	2,386	23,818	1. 58	. 20
1922	16,274	5,147	3,640	34,267	2. 11	. 26
1923	15,291	4,685	3,605	33,525	2. 19	. 27
1924	15,407	4,078	3,903	35,302	2. 29	. 29
1925	15,313	3,236	3,089	27,946	1. 82	. 23
1926	15,245	3,577	3,900	34,777	2. 28	. 28

Division of Crop and Livestock Estimates.

[2] These 10 States produced 97 per cent of the maple sugar and 97.1 per cent of the maple sirup made in the United States in 1919 as reported by the Bureau of the Census. That bureau also reported 98.1 per cent of the trees tapped in 1919 as being in these States (11 States including Connecticut from 1917 to 1923, inclusive.)

TABLE 322.—*Maple sugar and sirup: Estimated price received by producers, United States, 1917–1926*

Month	Sugar (cents per pound) 1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Sirup (dollars per gallon) 1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
Feb. 15	14. 7	18. 8	22. 0	29. 3	24. 9	17. 5	22. 0	23. 4	23. 3	----	1. 22	1. 58	1. 86	2. 35	2. 27	1. 84	1. 89	2. 01	2. 05	----
Mar. 15	14. 7	20. 5	25. 3	31. 6	25. 7	21. 9	23. 2	25. 5	24. 4	27. 5	1. 30	1. 76	1. 99	2. 58	2. 17	1. 94	1. 96	2. 04	2. 13	2. 15
Apr. 15	16. 3	22. 5	26. 9	37. 0	25. 7	23. 1	26. 0	25. 6	27. 8	29. 4	1. 33	1. 80	2. 03	2. 92	2. 21	1. 93	2. 09	2. 08	2. 10	2. 29
May 15	16. 2	22. 6	26. 3	36. 0	21. 5	21. 6	26. 4	27. 8	27. 4	28. 5	1. 34	1. 85	2. 02	2. 93	2. 08	1. 86	1. 75	2. 06	2. 10	2. 22
June 15	15. 9	22. 0	26. 2	35. 1	20. 7	21. 3	25. 6	25. 6	26. 5	28. 5	1. 33	1. 85	2. 19	2. 84	2. 10	1. 86	2. 05	1. 97	2. 10	2. 16

Division of Crop and Livestock Estimates.

TABLE 323.—*Clover seed:*[1] *Acreage, production, and November 15 price, United States, 1916–1926*

Year	Acreage	Average yield per acre	Production	Average farm price per bushel, Nov. 15	Year	Acreage	Average yield per acre	Production	Average farm price per bushel, Nov. 15
	1,000 acres	*Bushels*	*1,000 bushels*	*Dollars*		*1,000 acres*	*Bushels*	*1,000 bushels*	*Dollars*
1916	939	1. 82	1,706	9. 18	1922	1,194	1. 52	1,815	10. 03
1917	821	1. 81	1,488	12. 84	1923	753	1. 37	1,028	12. 05
1918	820	1. 46	1,197	19. 80	1924	820	1. 17	958	14. 49
1919	1,006	1. 54	1,545	26. 52	1925	823	1. 35	1,113	[2] 14. 87
1920	1,149	1. 76	2,023	11. 60	1926 [3]	550	1. 45	797	[2] 17. 72
1921	900	1. 58	1,422	10. 05					

Division of Crop and Livestock Estimates.

[1] Includes red, alsike, and white. [2] Dec. 1 price. [3] Preliminary.

TABLE 324.—*Clover seed:*[1] *Acreage, production, and December 1 price, by States, 1924–1926*

State	Acreage			Average yield per acre			Production			Price per bushel received by producers Dec. 1		
	1924	1925	1926[2]	1924	1925	1926	1924	1925	1926[2]	1924[3]	1925	1926
	1,000 acres	*1,000 acres*	*1,000 acres*	*Bus.*	*Bus.*	*Bus.*	*1,000 bus.*	*1,000 bus.*	*1,000 bus.*	*Dolls.*	*Dolls.*	*Dolls.*
New York	8	7	5	2.7	1.7	1.7	22	12	8	14.00	14.30	20.00
Pennsylvania	17	16	8	1.5	1.8	1.5	26	29	12	14.00	15.70	18.50
Ohio	156	168	67	1.0	1.1	.9	156	185	60	16.00	15.10	19.25
Indiana	171	115	75	.8	.7	.7	137	80	52	14.80	15.40	18.25
Illinois	110	110	88	1.1	.9	1.1	121	99	97	15.80	15.60	18.75
Michigan	90	72	43	1.2	1.4	1.5	108	101	64	14.00	15.00	18.00
Wisconsin	60	122	92	1.1	1.9	1.7	66	232	156	14.50	14.60	17.70
Minnesota	63	43	30	1.9	2.0	2.3	120	86	69	13.30	14.40	17.50
Iowa	66	95	65	.7	1.0	1.2	46	95	78	15.20	16.00	18.00
Missouri	23	20	22	1.4	1.5	1.7	32	30	37	13.00	13.60	16.50
Nebraska	9	10	12	1.2	1.9	1.6	11	19	19	13.00	12.00	15.90
Kansas	14	8	10	2.0	1.8	2.1	28	14	21	13.00	12.20	15.00
North Carolina	8	9	8	2.8	3.2	3.1	22	29	25	14.50	14.50	14.50
Tennessee	4	5	2	1.6	1.4	2.5	6	7	5	14.00	16.00	16.48
Montana	3	7	5	3.0	3.1	5.0	9	22	25	12.00	14.00	18.00
Idaho	14	13	16	3.0	5.0	3.8	42	65	61	12.00	14.20	17.00
Oregon	4	3	2.5	1.5	2.5	3.0	6	8	8	12.00	15.00	17.00
United States	820	823	550.5	1.17	1.35	1.45	958	1,113	797	14.49	14.87	17.72

Division of Crop and Livestock Estimates.

[1] Includes red, alsike, and white. [2] Preliminary. [3] November 15 price.

TABLE 325.—*Clover seed: Receipts and shipments, Chicago, averages 1909–1925, annual 1920–1926*

[Thousand pounds—i. e., 000 omitted]

RECEIPTS

Year beginning September	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Total
Average:													
1909–1913	622	652	549	426	422	513	677	328	180	320	180	455	5,325
1914–1920	1,280	1,519	1,363	1,285	1,724	1,831	1,580	764	222	133	96	368	12,167
1921–1925	700	1,221	1,740	1,729	1,373	1,499	2,158	967	287	85	52	411	12,221
1920	1,549	2,448	1,033	1,314	2,762	3,150	3,996	1,570	418	319	84	365	19,008
1921	739	1,235	2,040	2,064	1,585	1,692	2,448	1,050	352	169	77	997	14,448
1922	1,368	1,299	1,479	1,214	1,044	629	1,825	845	348	109	8	271	10,439
1923	641	1,681	1,109	1,039	633	1,672	2,054	1,352	239	41	1	42	10,504
1924	360	863	2,078	1,723	1,537	1,507	1,574	740	9	27	68	328	10,814
1925	393	1,027	1,992	2,603	2,068	1,995	2,888	849	487	78	107	415	14,902
1926	1,097	3,526	2,140	1,350	------	------	------	------	------	------	------	------	------

SHIPMENTS

Year beginning September	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Total
Average.													
1909–1913	230	217	337	320	521	921	903	447	185	106	115	111	4,413
1914–1920	328	472	933	1,013	1,346	1,771	1,665	1,036	295	82	128	216	9,286
1921–1925	341	621	887	959	1,503	1,404	1,575	930	324	126	143	184	8,995
1920	107	589	691	769	1,554	2,997	3,104	1,694	370	167	239	528	12,809
1921	371	781	691	1,236	1,728	2,167	2,416	1,030	818	147	133	230	11,748
1922	547	1,172	1,187	1,169	1,430	906	1,252	820	223	75	122	285	9,188
1923	530	514	705	670	1,370	1,075	1,477	1,502	346	230	177	224	8,820
1924	180	402	1,395	803	1,148	1,273	985	418	43	54	114	108	6,923
1925	77	236	456	917	1,837	1,597	1,746	880	189	123	167	71	8,296
1926	714	1,072	1,067	968	------	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from annual reports of the Chicago Board of Trade and the Seed World.

Data 1910–1919 available in 1924 Yearbook, p. 815, Table 398.

Table 326.—*Timothy seed: Receipts and shipments, Chicago, averages, 1909–1925, annual 1920–1926*

[Thousand pounds—i. e. 000 omitted]

RECEIPTS

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
Average:													
1909–1913	2, 965	7, 614	5, 306	3, 111	1, 698	1, 716	2, 059	3, 082	2, 255	695	855	1, 238	32, 595
1914–1920	3, 420	9, 622	5, 737	3, 534	2, 489	2, 249	2, 716	3, 613	2, 099	1, 670	836	744	38, 729
1921–1925	6, 905	9, 981	4, 647	2, 555	1, 665	1, 675	1, 858	2, 244	1, 329	763	487	414	34, 522
1920	3, 313	12, 777	9, 013	5, 269	3, 445	2, 343	3, 386	4, 056	2, 601	2, 368	1, 249	531	50, 351
1921	10, 849	6, 269	4, 586	3, 197	2, 669	2, 404	2, 899	2, 827	780	1, 215	472	119	38, 286
1922	8, 985	9, 600	4, 516	2, 048	1, 050	570	1, 352	1, 697	1, 243	398	355	84	31, 898
1923	5, 061	13, 722	4, 419	1, 606	1, 299	762	1, 311	1, 815	1, 162	86	315	507	32, 065
1924	3, 698	12, 714	4, 707	3, 876	1, 654	2, 138	1, 928	2, 566	1, 727	1, 167	664	687	37, 526
1925	5, 933	7, 599	5, 009	2, 047	1, 651	2, 499	1, 801	2, 316	1, 735	947	627	672	32, 836
1926	5, 937	7, 981	3, 368	2, 153	1, 127	------	------	------	------	------	------	------	------

SHIPMENTS

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
Average:													
1909–1913	1, 797	4, 847	2, 908	2, 203	1, 491	1, 981	2, 470	3, 572	2, 549	813	690	910	26, 230
1914–1920	2, 093	4, 883	3, 706	2, 737	2, 475	2, 653	3, 111	4, 572	2, 894	1, 605	644	867	32, 239
1921–1925	3, 065	6, 073	3, 574	1, 972	1, 545	1, 437	2, 458	3, 371	2, 178	1, 340	371	403	27, 786
1920	2, 233	4, 072	4, 150	1, 787	1, 594	3, 810	4, 531	5, 410	2, 708	1, 550	587	1, 001	33, 433
1921	5, 233	8, 567	3, 750	2, 340	2, 846	2, 551	4, 108	5, 187	2, 129	2, 598	336	352	39, 997
1922	3, 896	6, 303	4, 580	3, 943	1, 895	2, 106	2, 451	3, 291	2, 221	1, 394	353	217	32, 650
1923	2, 481	3, 926	1, 804	1, 573	1, 001	735	2, 040	3, 206	2, 904	1, 202	416	516	21, 804
1924	1, 040	7, 546	4, 726	1, 295	1, 383	1, 430	2, 478	3, 270	2, 166	557	232	362	26, 485
1925	2, 677	4, 021	3, 011	709	598	364	1, 212	1, 902	1, 468	947	518	566	17, 993
1926	3, 393	7, 105	3, 625	2, 832	1, 784	------	------	------	------	------	------	------	------

Division of Statistical and Historical Research. Compiled from annual reports of the Chicago Board of Trade and the Seed World.

Data 1910–1919 available in 1924 Yearbook, p. 815, Table 399.

Table 327.—*Forage plant seed: Imports into United States, 1913–1925* [1]

[Thousand pounds—i. e., 000 omitted]

Kind of seed	Year ended June 30												
	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
Alfalfa	5, 203	6, 930	3, 252	3, 170	45	770	18, 831	942	7, 259	8, 784	12, 818	4, 783	4, 548
Canada blue grass	567	1, 043	698	495	1, 229	739	552	1, 118	1, 034	836	817	1, 150	284
Awnless brome grass	139	7	(2)	1	------	------	169	9	14	------	------	------	11
Alsike clover	2, 688	778	1, 113	4, 329	3, 528	7, 032	5, 648	4, 121	7, 057	5, 566	11, 056	10, 425	10, 989
Crimson clover	8, 534	11, 690	4, 504	5, 776	1, 603	1, 484	10, 053	5, 566	3, 443	2, 262	7, 745	4, 834	5, 766
Red clover	5, 921	8, 932	32, 509	5, 344	768	1, 051	19, 268	16, 333	10, 391	448	24, 729	6, 541	19, 725
White clover	640	373	149	158	53	1	189	516	1, 623	520	1, 408	1, 227	1, 666
Biennial white sweet clover	42	194	(3)	195	71	941	2, 215	3, 133	------	------	4, 039	3, 493	5, 879
Biennial yellow sweet clover	243	201	(3)	9	------	1	202	235	------	------	222	52	502
Clover mixtures	------	------	------	26	169	550	265	23	57	20	74	13	122
Grass mixtures	------	------	------	124	6	(2)	3	6	43	(3)	------	200	(2)
Spring vetch and oats mixtures	------	------	------	------	------	------	------	4	------	------	------	------	------
Meadow fescue	------	------	------	------	------	------	3	------	1	------	(2)	1	13
Broomcorn millet	1, 520	1, 305	1, 102	786	1, 584	------	225	152	1, 496	5, 360	595	253	456
Foxtail millet	523	338	118	260	9	138	146	434	302	65	184	243	125
Orchard grass	1, 939	701	754	1, 286	58	177	2, 771	------	2, 922	768	603	992	253
Rape	2, 981	3, 966	4, 019	2, 286	11, 316	639	5, 766	4, 245	4, 763	6, 384	6, 600	4, 345	6, 526
Perennial rye grass	1, 429	1, 342	1, 510	1, 668	1, 584	831	1, 958	1, 523	1, 868	1, 834	1, 952	1, 335	2, 302
Italian rye grass	311	485	383	481	606	208	980	577	828	860	1, 034	831	1, 683
Timothy	23	18	119	4	22	155	37	391	95	32	(2)	1	3
Hairy vetch	2, 477	466	68	296	231	257	1, 220	1, 387	1, 941	1, 599	3, 215	2, 068	3, 986
Spring vetch	682	221	62	30	118	435	1, 048	542	345	1, 858	1, 210	1, 266	1, 603

Division of Hay, Feed, and Seed. Compiled mainly from data of the seed laboratory, Bureau of Plant Industry.

[1] Imports of perennial and Italian rye grass and hairy vetch up to and including 1917, and sweet clover for all years, are based on information furnished by United States Customs Service. All other figures represent imports of seed permitted entry under the Federal seed act (formerly designated the seed importation act).

[2] Less than 500 pounds.

[3] Figures missing.

TABLE 328.—*Alfalfa seed: Estimated price per bushel, received by producers, United States, 1912–1926*

Year beginning July	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1912	8.32	8.58	9.02	7.87	8.23	7.86	7.66	8.15	8.19	8.36	8.21	8.08	8.21
1913	8.20	7.96	7.42	6.96	6.36	6.60	6.55	6.48	6.60	6.77	6.77	6.83	6.96
1914	6.92	6.81	7.21	7.29	7.29	7.57	7.61	7.86	7.92	8.45	8.38	8.31	7.52
1915	8.51	8.30	7.94	8.37	8.65	8.88	8.84	9.20	10.02	10.39	10.70	10.10	9.16
1916	10.30	9.33	9.27	8.61	8.30	8.56	7.97	7.75	8.53	9.03	8.85	8.61	8.76
1917	8.71	8.69	9.04	9.04	9.43	9.58	10.14	9.90	10.60	10.53	10.09	10.13	9.66
1918	9.67	9.88	10.04	9.91	9.38	9.65	10.07	10.48	10.64	11.18	12.13	11.79	10.40
1919	10.88	11.34	12.34	14.90	15.23	16.68	16.60	19.57	21.43	21.80	22.40	20.42	16.97
1920	19.41	16.03	14.89	13.35	12.25	10.24	9.95	9.01	9.31	8.71	8.97	8.78	11.74
1921	7.89	8.51	8.53	8.33	8.09	7.63	7.39	8.45	7.50	9.00	8.89	8.48	8.22
1922	9.00	7.74	8.00	7.94	8.50	9.45	9.58	9.96	10.56	10.44	10.59	10.57	9.36
1923	10.25	10.38	9.20	10.75	10.21	10.19	10.43	10.51	11.17	11.41	11.67	11.39	10.63
1924	11.13	10.99	10.74	10.39	10.16	10.33	10.52	11.05	11.72	12.73	12.00	10.99	11.06
1925	11.41	9.88	10.51	10.30	10.65	9.87	9.51	9.48	9.82	9.94	9.92	10.22	10.13
1926	9.79	9.37	9.17	8.94	9.42	9.48							

Division of Crop and Livestock Estimates.

TABLE 329.—*Clover seed: Estimated price per bushel, received by producers, United States, 1910–1926*

Year beginning September	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Weighted av.
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1910–1913	8.79	8.71	8.62	8.82	9.14	9.74	10.01	10.19	9.97	9.56	9.34	9.40	9.25
1914–1920	13.84	13.87	14.00	14.23	14.76	15.57	16.08	16.44	15.73	14.76	14.44	13.92	14.80
1921–1925	11.15	11.86	12.14	12.85	13.31	13.97	14.68	14.60	14.40	13.56	13.44	12.82	13.09
1910	8.27	8.13	7.70	7.94	8.27	8.37	8.56	8.79	8.74	8.80	8.83	9.65	8.30
1911	10.19	10.33	10.37	10.62	10.89	12.22	12.89	12.91	12.53	11.69	10.64	9.80	11.25
1912	9.39	9.37	9.06	9.00	9.41	10.28	10.42	11.00	10.74	9.77	9.78	9.37	9.71
1913	7.31	7.00	7.33	7.70	7.99	8.07	8.17	8.06	7.87	7.96	8.12	8.76	7.75
1914	9.10	8.24	8.02	8.12	8.51	8.60	8.55	8.36	8.14	7.90	7.96	7.94	8.41
1915	8.49	9.70	9.67	10.01	10.27	10.47	10.76	10.58	9.98	9.47	9.15	9.12	9.98
1916	8.65	8.54	9.20	9.40	9.60	9.87	10.32	10.41	10.40	10.29	10.50	10.53	9.54
1917	10.89	11.92	12.91	13.53	14.48	16.46	17.49	17.86	16.56	15.88	14.71	15.20	14.48
1918	16.61	19.01	20.03	20.67	21.55	21.79	22.61	24.81	24.48	23.37	23.25	24.33	21.01
1919	25.38	26.47	26.53	27.63	28.06	31.21	31.88	32.23	29.84	26.21	25.52	19.97	28.34
1920	17.77	13.18	11.64	10.28	10.82	10.61	10.98	10.80	10.71	10.20	10.00	10.37	11.81
1921	10.25	10.21	10.09	10.38	10.69	11.88	13.00	13.13	12.84	11.60	11.00	9.88	11.14
1922	8.85	9.66	10.18	10.88	11.16	11.52	11.71	11.48	11.20	10.84	10.94	10.46	10.71
1923	11.07	12.20	12.18	12.22	12.51	12.67	13.04	13.09	13.07	12.72	12.42	12.09	12.38
1924	12.15	12.80	13.42	15.31	16.17	16.95	18.19	17.40	16.82	15.48	15.67	14.86	15.35
1925	13.42	14.42	14.85	15.48	16.04	16.83	17.45	17.88	18.08	17.16	17.17	16.83	15.87
1926	16.63	17.21	17.85	17.89									

Division of Crop and Livestock Estimates.

Table 330.—*Timothy seed: Estimated price per bushel, received by producers United States, 1910–1926*

Year beginning August	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Weighted av.
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1910–1913	3.91	3.66	3.72	3.72	3.68	3.74	3.92	4.07	4.12	4.14	3.98	3.92	3.82
1914–1920	3.35	3.21	3.29	3.25	3.30	3.49	3.57	3.69	3.69	3.80	3.66	3.61	3.39
1921–1925	2.82	2.79	2.93	2.85	2.98	3.11	3.19	3.24	3.27	3.20	3.13	3.13	2.97
1910	------	3.77	4.03	4.08	4.11	4.12	4.51	4.93	5.17	5.24	5.24	5.48	4.28
1911	6.52	6.65	6.91	6.90	6.72	6.99	7.26	7.33	7.27	7.16	6.68	5.96	6.87
1912	3.20	2.09	1.95	1.82	1.79	1.79	1.78	1.72	1.74	1.76	1.77	1.94	2.01
1913	2.01	2.13	2.02	2.08	2.10	2.07	2.12	2.30	2.28	2.38	2.23	2.32	2.13
1914	2.43	2.46	2.34	2.34	2.18	2.63	2.66	2.78	2.69	2.75	2.65	2.57	2.49
1915	2.56	2.62	2.72	2.91	2.86	3.05	3.19	3.28	3.51	3.33	3.26	3.08	2.89
1916	2.36	2.22	2.27	2.25	2.31	2.44	2.46	2.70	2.76	3.09	3.09	3.04	2.42
1917	3.23	3.31	3.61	3.25	3.37	3.57	3.78	3.84	3.74	3.84	3.56	3.67	3.50
1918	3.87	3.79	4.08	4.26	4.21	4.34	4.51	4.54	4.69	5.05	4.63	4.49	4.19
1919	4.58	4.55	4.78	4.67	4.98	5.35	5.62	5.61	5.63	5.61	5.46	5.44	4.98
1920	4.44	3.52	3.25	3.09	3.16	3.04	2.75	2.97	2.8[illegible]	2.90	2.99	2.98	3.29
1921	2.71	2.31	2.70	2.41	2.57	2.70	2.82	2.95	3.11	3.21	2.81	2.53	2.64
1922	2.20	2.28	2.48	2.49	2.69	3.06	2.98	3.00	2.99	2.87	2.92	3.16	2.60
1923	2.63	3.01	3.12	3.15	3.19	3.37	3.56	3.60	3.54	3.48	3.44	3.23	3.19
1924	3.20	3.12	3.16	2.88	3.03	3.04	3.03	3.15	3.24	3.10	3.05	3.47	3.11
1925	3.36	3.21	3.21	3.31	3.41	3.38	3.56	3.51	3.47	3.36	3.41	3.26	3.33
1926	2.68	2.55	2.61	2.46	2.58	------	------	------	------	------	------	------	------

Division of Crop and Livestock Estimates.

Table 331.—*Field seeds: Average price per 100 pounds paid to growers for crops of 1920–1926*

ALFALFA SEED

State or State subdivision	1920	1921	1922	1923	1924	1925	1926
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*
Southern Arizona	17.00	14.35	15.50	16.25	16.25	15.15	13.50
California	15.90	14.00	14.75	17.00	17.25	16.50	12.70
Colorado	13.00	11.85	11.60	15.25	15.40	13.75	14.30
Southern Idaho	11.80	12.00	14.95	15.50	15.00	15.00	14.65
Northwestern Kansas	14.25	10.65	12.10	15.50	14.65	13.90	13.00
Southeastern Kansas	16.40	13.60	------	------	------	13.65	13.70
Southwestern Kansas	14.70	11.35	12.90	15.00	14.70	13.70	13.00
Montana	17.00	17.85	21.05	19.25	19.50	17.90	16.65
Nebraska	15.80	10.10	13.90	------	------	14.90	16.00
Eastern New Mexico	14.00	10.80	13.00	14.30	15.80	13.85	11.90
Western Oklahoma	12.85	11.20	13.30	15.25	13.65	14.20	12.20
South Dakota	18.75	13.20	17.00	18.35	19.50	18.00	16.25
Western Texas	20.65	14.75	13.10	14.50	15.50	16.00	12.85
Utah	16.00	11.75	15.50	16.00	16.00	13.90	14.50

ALSIKE CLOVER SEED

State or State subdivision	1920	1921	1922	1923	1924	1925	1926
Southern Idaho	22.00	14.50	13.60	13.50	14.10	20.35	24.00
Northern Illinois	22.05	14.65	13.80	14.20	16.50	19.55	23.10
Northern Indiana	21.75	14.80	14.55	12.85	15.25	21.75	24.50
Southern Michigan	20.90	13.50	13.50	12.90	15.40	22.50	22.50
Minnesota	19.25	13.65	12.95	12.30	15.40	20.00	23.85
Western New York	21.10	14.50	------	------	------	19.55	24.00
Northwestern Ohio	22.30	13.30	12.90	13.05	16.20	20.95	26.90
Western Oregon	23.50	13.65	15.20	13.25	13.55	22.00	23.65
Northeastern Wisconsin	18.95	14.30	11.80	12.45	13.80	19.40	25.80
Southeastern Wisconsin	20.20	14.20	12.85	12.25	12.90	19.25	23.80

TABLE 331.—*Field seeds: Average price per 100 pounds paid to growers for crops of 1920–1926*—Continued

RED CLOVER SEED

State or State subdivision	1920	1921	1922	1923	1924	1925	1926
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Idaho	13.95	15.10	16.75	18.25	21.30	25.25	29.05
Northern Illinois	18.70	16.30	17.25	20.40	27.50	26.35	33.00
Central Illinois	18.40	16.55	16.55	20.40	27.50	25.90	30.75
Northern Indiana	19.10	17.00	17.20	19.70	26.35	25.95	30.95
Central Indiana	18.50	16.55	16.15	19.70	26.35	26.00	33.25
Northeastern Iowa	17.80	16.45	16.60			24.20	29.40
Southeastern Iowa	18.30	15.40	16.10	19.85	26.35	23.80	30.05
Southwestern Iowa	17.25	15.90	17.05			24.40	30.25
Kansas	15.65	15.30	16.30			22.50	26.65
Southern Michigan	17.10	16.60	17.35	18.70	27.20	25.80	30.30
Minnesota	16.75	15.50	17.10	19.00	23.90	23.65	28.20
Missouri	15.85	16.05	15.55	18.35	21.80	21.65	27.35
Nebraska	14.65	15.35	16.15			23.05	26.40
Northwestern Ohio	19.05	17.20	17.55	19.30	27.35	24.85	30.50
Western Oregon	22.35	15.30	20.10	19.65	23.05	25.65	27.15
Northeastern Wisconsin	16.30	16.65	17.35	18.30	25.15	24.15	26.55
Southeastern Wisconsin	18.40	17.55	17.90	19.70	26.35	25.05	27.45
Southwestern Wisconsin	16.75	16.85	17.45	19.70	26.35	25.00	27.45

SWEET CLOVER SEED

Colorado	9.90	4.25	4.55	8.60	8.25	6.20	8.20
Illinois	16.30	10.15	7.10	9.70	10.20	8.70	9.25
Kansas	8.15	5.10	7.75	9.10	8.80	6.60	8.10
Minnesota	8.00	4.50	6.85	9.15	8.15	5.00	9.25
Montana	11.50	5.00	7.00	9.15	8.35	6.30	8.25
Nebraska	12.50	6.50				6.85	8.00
North Dakota	9.60	4.40	7.35	9.00	8.35	5.50	9.10
South Dakota	9.50	5.00	7.00	9.70	8.05	5.35	8.75
Utah	8.50	3.00		10.00	10.20	5.75	9.15
Wyoming			8.60	10.25	10.00	7.00	8.75

TIMOTHY SEED

Northern and central Idaho	5.25	4.10	4.45	5.50	5.90		
Northern Illinois	6.50	4.50	4.70			6.65	4.70
Central Illinois	6.30	4.85	4.95	6.15	5.75	6.90	4.80
Southern Illinois	6.75	4.95	5.15	6.00	5.75	6.75	4.50
Indiana	6.25	4.70	5.15	5.50	5.75	7.05	4.60
Northeastern Iowa	5.40	4.20	4.70	6.30	5.55	6.50	4.65
Southeastern Iowa	6.05	4.50	4.60	5.95	5.60	6.80	4.60
Southwestern Iowa	5.50	4.10	4.55	5.90	5.70	6.70	4.75
Kansas	5.25	5.60					
Northwestern Minnesota	5.10	4.35	4.55			5.15	4.40
Southern Minnesota	5.50	4.45	4.85	6.25	5.40	6.15	4.55
Northeastern Missouri	5.75	4.30	4.95	6.05	5.95	6.70	4.75
Northwestern Missouri	5.50	3.95	4.60	5.55	5.85	6.65	4.60
North Dakota	5.80	5.20	4.55			5.00	4.45
Northeastern Ohio	6.65	4.85	4.95	6.55	5.70	6.70	5.05
Northwestern Ohio	5.85	4.70	5.00	6.55	5.70	7.05	5.10
Northeastern South Dakota	5.05	4.45	4.60	5.75	5.05	5.90	4.10
Southeastern South Dakota	5.65	4.05	4.60	5.95	4.95	5.85	4.50
Wisconsin	5.90	4.80	5.05			6.15	5.15

Division of Statistical and Historical Research. Compiled from data of the Division of Hay, Feed, and Seed. Weighted average price based on reports received annually from seed shippers.

TABLE 332.—*Alfalfa seed: Average wholesale selling price per 100 pounds at Kansas City and Minneapolis, 1920–1926*

Year	Kansas City						Minneapolis					
	Jan.	Feb.	Mar.	Apr.	May	Av.	Jan.	Feb.	Mar.	Apr.	May	Av.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Av. 1921–1925	19.68	19.82	20.26	20.71	20.78	20.25	21.11	21.12	21.34	22.07	22.03	21.53
1920	42.00	42.00	40.25	39.00	37.60	40.17	45.60	46.00	44.90	41.65	38.30	43.29
1921	18.50	18.00	18.40	18.50	18.15	18.31	19.00	19.00	19.40	21.40	21.00	19.96
1922	16.90	18.00	18.50	17.90	18.50	17.96	19.00	19.50	19.50	19.80	20.25	19.61
1923	19.50	19.50	19.50	20.65	21.00	20.03	21.25	21.00	20.50	20.75	21.00	20.90
1924	21.50	21.50	22.30	23.00	23.00	22.26	22.50	22.50	23.90	24.90	24.80	23.72
1925	22.00	22.10	22.60	23.50	23.25	22.69	23.80	23.60	23.40	23.50	23.10	23.48
1926	20.00	20.00	20.00	21.00	21.00	20.40	19.00	19.62	20.50	20.50	20.50	20.02

Division of Statistical and Historical Research. Compiled from weekly reports of the Division of Hay, Feed, and Seed. These prices are the average wholesale selling prices for high-quality seed, as reported to the Division of Hay, Feed, and Seed weekly, by seedsmen in these markets.

TABLE 333.—*Red clover seed: Average wholesale selling price per 100 pounds at Chicago and Toledo, 1920–1926*

Year	Chicago						Toledo					
	Jan.	Feb.	Mar.	Apr.	May	Av.	Jan.	Feb.	Mar.	Apr.	May	Av.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Av. 1921–1925	24.66	24.52	24.45	23.20	22.17	23.80	24.42	23.58	23.46	22.24	21.81	23.10
1920	55.20	57.00	56.30	50.25	43.20	52.39	57.25	58.50	57.45	49.70	43.50	53.28
1921	21.25	18.05	20.80	19.95	18.55	19.72	21.20	18.30	20.90	21.20	22.80	20.88
1922	22.20	24.55	25.45	23.35	21.95	23.50	23.30	25.40	26.60	23.60	22.90	24.36
1923	22.55	22.45	20.60	19.70	19.35	20.93	22.45	22.30	20.85	19.65	18.80	20.81
1924	23.10	21.55	21.10	19.60	19.00	20.87	22.45	20.50	19.75	18.70	18.40	19.96
1925	34.20	36.00	34.30	38.40	32.00	33.98	32.70	31.40	29.20	28.05	26.15	29.50
1926	32.17	33.50	34.69	34.00	34.00	33.67	26.25	25.41	25.01	23.92	24.70	25.06

Division of Statistical and Historical Research. Compiled from weekly reports of the Division of Hay, Feed, and Seed. These prices are the average wholesale selling prices for high quality seed, as reported to the Division of Hay, Feed, and Seed, weekly, by seedsmen in these markets.

TABLE 334.—*Alsike clover seed: Average wholesale selling price per 100 pounds at Chicago and Toledo, 1920–1926*

Year	Chicago						Toledo					
	Jan.	Feb.	Mar.	Apr.	May	Av.	Jan.	Feb.	Mar.	Apr.	May	Av.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Av. 1921–1925	19.53	19.20	19.29	19.20	18.83	19.21	20.31	20.12	20.01	19.91	19.96	20.06
1920	55.80	57.50	58.00	53.25	43.20	53.55	57.70	58.60	59.30	52.60	42.50	54.14
1921	25.65	22.40	22.45	21.60	19.50	22.32	26.60	25.45	25.15	23.10	22.50	24.56
1922	18.20	19.25	19.00	17.30	17.30	18.21	19.35	20.70	19.90	18.80	18.95	19.54
1923	16.50	16.50	16.50	16.45	16.35	16.46	17.90	17.60	17.50	17.50	17.40	17.58
1924	15.55	15.45	15.45	15.90	16.00	15.67	15.55	15.40	14.80	15.25	16.15	15.43
1925	21.75	22.40	23.05	24.75	25.00	23.39	22.15	21.45	22.70	24.90	24.80	23.20
1926	26.08	27.25	27.88	28.19	28.38	27.56	27.22	27.82	28.35	28.35	28.35	28.02

Division of Statistical and Historical Research. Compiled from weekly reports of the Division of Hay, Feed, and Seed. These prices are the average wholesale selling prices for high quality seed, as reported to the Division of Hay, Feed, and Seed, weekly, by seedsmen in these markets.

TABLE 335.—*Timothy seed: Aver wholesale selling price per 100 pounds at Chicago t. Louis, 1920–1926*

Year	Chicago						St. Louis					
	Jan.	Feb.	Mar.	Apr.	May	Av.	Jan.	Feb.	Mar.	Apr.	May	Av.
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Av. 1921–1925	7.25	7.15	7.07	6.93	6.94	7.07	7.54	7.42	7.18	7.15	7.18	7.28
1920	13.50	13.90	13.30	12.65	12.30	13.13	14.05	14.75	13.65	12.80	12.50	13.55
1921	7.10	6.50	6.40	6.40	6.45	6.57	7.50	7.00	6.60	6.95	7.15	7.04
1922	7.05	7.30	7.30	6.60	6.70	6.99	7.00	7.30	7.00	6.45	6.35	6.82
1923	7.00	7.00	7.05	7.05	7.00	7.02	7.50	7.30	7.15	7.25	7.25	7.29
1924	8.15	8.25	8.10	7.75	7.55	7.96	8.45	8.45	8.25	8.20	8.00	8.27
1925	6.95	6.70	6.50	6.85	7.00	6.80	7.25	7.05	6.90	6.90	6.90	7.00
1926	8.10	8.10	7.99	7.78	7.75	7.94	8.33	8.12	8.00	8.06	8.00	8.10

Division of Statistical and Historical Research. Compiled from weekly reports of the Division of Hay, Feed, and Seed. These prices are the average wholesale selling prices for high quality seed, as reported to the Division of Hay, Feed, and Seed, weekly, by seedmen in these markets.

TOBACCO

TABLE 336.—*Tobacco: Acreage, production, value, exports, etc., United States, 1909–1926*

Year	Acreage	Average yield per acre	Production	Price per pound received by producers Dec 1	Farm value Dec. 1	Value per acre[1]	Domestic exports of unmanufactured, fiscal year beginning July[2]	Imports of unmanufactured, fiscal year beginning July[2]
	Acres	*Pounds*	*Pounds*	*Cents*	*Dollars*	*Dollars*	*Pounds*	*Pounds*
Average: 1909–1913	1,223,000	814.3	996,049,000	10.4	104,054,000	85.07	392,183,071	55,789,785
1914–1920	1,583,000	810.8	1,283,750,000	22.0	282,374,000	178.35	468,037,237	66,694,695
1921–1925	1,692,400	763.4	1,291,922,000	20.3	262,597,000	155.16	496,665,054	68,470,450
1909	*1,295,000*	814.8	1,055,133,000	10.1	106,374,000	82.14	357,196,074	46,853,389
1910	1,366,000	807.7	1,103,415,000	9.3	102,142,000	74.77	355,327,072	48,203,288
1911	1,013,000	893.7	905,109,000	9.4	85,210,000	84.12	379,845,320	54,740,380
1912	1,226,000	785.5	962,855,000	10.8	104,063,000	84.88	418,796,906	67,977,118
1913	1,216,000	784.3	953,734,000	12.8	122,481,000	100.72	449,749,982	61,174,751
1914	1,224,000	845.7	1,034,679,000	9.8	101,411,000	82.85	348,346,091	45,809,213
1915	1,370,000	775.4	1,062,237,000	9.1	96,281,000	70.28	443,293,156	48,077,956
1916	1,413,000	816.0	1,153,278,000	14.7	169,672,000	120.08	411,598,860	49,105,651
1917	1,518,000	823.1	1,249,276,000	24.0	300,449,000	197.92	289,170,686	86,990,541
1918	1,647,000	873.7	1,439,071,000	28.0	402,264,000	244.24	629,287,761	83,951,103
1919	1,951,000	751.1	1,465,481,000	39.0	570,868,000	292.60	648,037,655	94,005,182
1920	1,960,000	807.3	1,582,225,000	21.2	335,675,000	171.26	506,526,449	58,923,217
1921	1,427,000	749.6	1,069,693,000	19.9	212,728,000	149.07	463,388,521	65,225,437
1922	1,695,000	735.6	1,246,837,000	23.2	289,248,000	170.65	454,364,150	75,785,716
1923	1,877,000	807.2	1,515,110,000	19.9	301,096,000	160.41	597,630,387	54,497,204
1924	1,705,800	733.6	1,251,343,000	20.7	259,139,000	151.92	430,701,868	76,869,612
1925	1,757,300	783.3	1,376,628,000	18.2	250,774,000	142.70	537,240,346	69,974,282
1926[3]	1,664,700	795.0	1,323,388,000	18.5	245,175,000	147.27	------------	------------

Division of Crop and Livestock Estimates. Figures in italics are census returns.

[1] Based upon farm price, Dec. 1.

[2] Compiled from Commerce and Navigation of United States, 1909–1918, and June issues of Monthly Summary of Foreign Commerce, 1919–1926.

[3] Preliminary.

TABLE 337.—*Tobacco: Acreage and production, by States, 1923–1926*

State	Acreage				Production			
	1923	1924	1925	1926 [1]	1923	1924	1925	1926 [1]
	Acres	*Acres*	*Acres*	*Acres*	*1,000 lbs.*	*1,000 lbs.*	*1,000 lbs.*	*1,000 lbs.*
Massachusetts	9, 000	9, 000	8, 600	6, 500	12, 690	12, 060	10, 690	9, 412
Connecticut	29, 000	28, 800	29, 600	21, 900	40, 252	39, 456	40, 019	29, 346
New York	2, 000	2, 000	2, 000	2, 000	2, 250	2, 350	2, 200	2, 200
Pennsylvania	45, 000	46, 000	41, 000	33, 000	58, 950	57, 500	57, 400	43, 560
Ohio	47, 000	58, 000	52, 100	44, 200	42, 770	40, 890	50, 745	38, 189
Indiana	22, 000	21, 000	21, 000	16, 700	19, 778	18, 753	18, 291	14, 913
Wisconsin	44, 000	38, 000	32, 000	29, 000	48, 092	35, 720	44, 000	33, 350
Missouri	6, 000	5, 000	5, 000	5, 000	6, 600	4, 260	4, 075	4, 750
Maryland	27, 000	32, 000	30, 000	32, 000	21, 384	24, 480	24, 690	28, 800
Virginia	204, 000	210, 000	200, 000	188, 000	150, 960	136, 500	129, 400	132, 352
West Virginia	9, 000	8, 000	9, 000	10, 000	7, 740	6, 200	6, 975	8, 500
North Carolina	585, 000	497, 000	547, 000	574, 000	409, 500	286, 769	380, 165	393, 190
South Carolina	102, 000	94, 000	96, 000	81, 000	74, 460	[illegible], 590	71, 040	57, 510
Georgia	17, 000	40, 000	67, 000	51, 900	11, 237	31, 080	48, 240	39, 963
Florida	4, 000	6, 000	7, 000	5, 500	4, 292	4, 500	5, 824	5, 076
Kentucky	578, 000	485, 000	479, 000	426, 000	494, 190	405, 460	387, 990	374, 880
Tennessee	146, 000	125, 000	130, 000	137, 000	109, 500	99, 375	94, 380	106, 997
Louisiana	1, 000	1, 000	1, 000	1, 000	465	400	504	400
United States	1, 877, 000	1, 705, 800	1, 757, 300	1, 664, 700	1, 515, 110	1, 251, 343	1, 376, 628	1, 323, 388

Division of crop and livestock estimates.

[1] Preliminary.

TABLE 338.—*Tobacco: Yield per acre, by States, 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Lbs.	*Lbs.*	*Lbs.*	*Lbs*	*Lbs*	*Lbs.*	*Lbs.*		*Lbs.*	*Lbs.*	*Lbs*	*Lbs.*	*Lbs*	*Lbs.*	*Lbs.*
Mass	1, 286	1, 370	1, 068	1, 410	1 340	1, 243	1, 448	W. Va	797	750	825	860	775	775	850
Conn	1, 322	1, 454	1, 045	1, 388	1, 370	1, 352	1, 340	N C	607	561	500	700	577	695	685
N. Y	1, 152	1, 250	1. 110	1, 125	1, 175	1, 100	1, 100	S. C	645	630	640	730	485	740	710
Pa	1, 348	1, 460	1, 320	1. 310	1, 250	1, 400	1, 320	Ga	652	564	540	661	777	720	770
Ohio	882	920	900	910	705	974	864	Fla	931	900	1. 100	1, 073	750	832	923
Ind	888	875	900	899	893	871	893	Ky	839	846	850	855	836	810	880
Wis	1, 166	1, 281	1, 140	1, 903	940	1, 375	1, 150	Tenn	749	750	725	750	795	726	781
Mo	918	925	900	1, 100	852	815	950	La	454	450	450	465	400	504	400
Md	773	715	770	792	765	823	900								
Va	667	550	750	740	650	647	704	U. S	761. 9	749. 6	735. 6	807. 2	733. 6	783. 3	795. 0

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TABLE 339.—*Tobacco: Acreage, yield, and production, by types and districts, 1925 and 1926*

Class and type	U. S. type No.	Acreage		Yield per acre		Production		Price per pound		Farm value		Value per acre	
		1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926
TYPES OTHER THAN CIGARS													
Class 1, flue-cured:													
Old Belt—		*Acres*	*Acres*	*Pounds*	*Pounds*	*1,000 pounds*	*1,000 pounds*	*Cents*	*Cents*	*1,000 dols.*	*1,000 dols.*	*Dollars*	*Dollars*
Virginia	11	133, 200	121, 200	589	676	78, 403	81, 876	15. 1	25. 7	11, 839	21, 042	88. 88	173. 61
North Carolina	11	240, 000	235, 000	533	654	127, 863	153, 690	18. 7	26. 2	23, 910	40, 267	99. 63	171. 35
Total Old Belt	11	373, 200	356, 200	552. 7	661. 3	206, 266	235, 566	17. 3	26. 0	35, 749	61, 309	95. 79	172. 12
New Belt—													
North Carolina	12	268, 000	303, 000	834	704	223, 512	213, 180	25. 4	27. 0	56, 302	57, 559	210. 08	189. 96
Do	13	33, 000	32, 000	754	743	24, 890	23, 776	17. 3	24. 1	4, 306	5, 730	130. 48	179. 06
South Carolina	13	96, 000	81, 000	740	710	71, 040	57, 510	16. 5	23. 4	11, 722	13, 459	122. 10	166. 16
Georgia	14	66, 200	51, 100	716	765	47, 400	39, 095	14. 4	23. 6	6, 826	9, 226	103. 11	180. 55
Florida	14	4, 500	3, 100	700	800	3, 150	2, 481	15. 0	23. 0	472	571	104. 89	184. 19
Total New Belt	12-14	467, 700	470, 200	791. 1	714. 7	369, 992	336, 042	21. 5	25. 8	79, 628	86, 545	170. 25	184. 06
Total flue-cured		840, 900	826, 400	685. 3	691. 7	576, 258	571, 608	20. 0	25. 9	115, 377	147, 854	137. 21	178. 91
Class 2, fire-cured:													
Virginia Dark	21	56, 000	55, 200	751	730	42, 040	40, 296	16. 2	8. 1	6, 810	3, 264	121. 61	59. 13
Clarksville and Hopkinsville	22												
Kentucky		58, 000	50, 000	795	865	46, 110	43, 250	8. 5	7. 0	3, 919	3, 027	67. 57	60. 54
Tennessee		69, 000	70, 000	740	775	51, 060	54, 250	11. 6	8. 0	5, 923	4, 340	85. 84	62. 00
Total, Clarksville and Hopkinsville	22	127, 000	120, 000	765. 1	812. 5	97, 170	97, 500	10. 1	7. 6	9, 842	7, 367	77. 50	61. 39
Paducah	23												
Kentucky		58, 000	35, 000	780	815	45, 240	28, 525	6. 8	6. 0	3, 076	1, 712	53. 03	48. 91
Tennessee		16, 000	8, 000	750	650	12, 000	5, 200	7. 5	5. 0	900	260	56. 25	32. 50
Total Paducah	23	74, 000	43, 000	773. 5	784. 3	57, 240	33, 725	7. 0	5. 8	3, 976	1, 972	53. 73	45. 86
Henderson	24	18, 000	11, 000	775. 0	896	13, 950	9, 856	7. 3	7. 0	1, 018	690	56. 56	62. 73
Total fire-cured	21-24	275, 000	229, 200	765. 1	791. 3	210, 400	181, 377	10. 3	7. 3	21, 646	13, 293	78. 71	58. 00

Class 3, air-cured:													
Burley	31												
Virginia		3,600	3,600	903	1,050	3,252	3,780	16.7	15.0	543	567	150.83	157.50
West Virginia		9,000	10,000	775	850	6,975	8,500	18.2	17.0	1,269	1,445	141.00	144.50
North Carolina		6,000	4,000	650	624	3,900	2,544	19.5	12.0	760	305	126.67	76.25
Ohio		15,600	16,000	744	900	11,611	14,400	20.0	16.0	2,322	2,304	148.85	144.00
Indiana		15,300	13,200	863	879	13,209	11,609	16.8	11.5	2,219	1,335	145.03	101.14
Missouri		5,000	5,000	815	950	4,075	4,750	25.0	20.0	1,019	950	203.80	190.00
Kentucky		255,000	255,000	811	875	206,700	223,121	18.9	14.5	39,066	32,353	153.20	126.87
Tennessee		36,200	53,900	702	815	25,424	43,926	19.5	12.0	4,958	5,271	136.96	97.79
Total Burley	31	345,700	360,700	795.9	866.7	275,146	312,630	19.0	14.2	52,156	44,530	150.87	123.45
Maryland export	32	30,000	32,000	823	900	24,690	28,800	23.8	21.6	5,876	6,221	195.87	194.41
Eastern Ohio	32	400	600	1,125	1,000	450	600	11.0	15.0	49	90	122.50	150.00
One Sucker	35												
Indiana		5,300	3,200	877	981	4,648	3,139	7.8	4.5	363	141	68.49	44.06
Kentucky		30,000	28,000	833	920	24,990	25,760	8.7	7.5	2,174	1,932	72.47	69.00
Tennessee		8,800	5,100	670	710	5,896	3,621	7.2	5.2	425	188	48.30	36.86
Total One Sucker	35	44,100	36,300	805.8	895.9	35,534	32,520	8.3	7.0	2,962	2,261	67.17	62.29
Green River	36	60,000	47,000	850	944	51,000	44,368	6.9	6.5	3,519	2,884	58.65	61.36
Virginia sun-cured	37	7,200	8,000	792	800	5,705	6,400	16.4	8.5	936	544	130.00	68.00
Total air-cured	31-37	487,400	484,600	805.3	877.7	392,525	425,318	16.7	13.3	65,498	56,530	134.38	116.66
Miscellaneous, Louisiana		1,000	1,000	504	400	504	400	55.0	45.0	277	180	277.00	180.00
Total all types other than cigar		1,604,300	1,541,200	735.3	765.4	1,179,687	1,178,703	17.2	18.5	202,798	217,857	126.41	141.35
CIGAR TYPES													
Class 4, filler types:													
Pennsylvania—													
Seed leaf	41	39,700	32,000	1,406	1,321	55,800	42,270	10.1	10.2	5,636	4,312	141.96	134.75
Miami Valley—													
Gebhart	42	12,000	9,100	1,246	900	14,950	8,190	10.0	9.0	1,495	737	124.58	80.99
Spanish	43	16,400	16,000	934	800	15,318	12,800	13.0	11.0	1,991	1,408	121.40	88.00
Dutch	44	8,100	2,800	1,093	846	8,850	2,364	11.0	8.0	974	189	120.25	67.50
Georgia-Florida Sun Sumatra	45	1,400	1,400	1,071	1,100	1,500	1,540	20.0	20 0	300	308	214.29	220.00
Total, filler types		77,600	61,300	1,242.5	1,095.7	96,418	67,164	10.8	10.4	10,396	6,954	133.97	113.44

TABLE 339.—*Tobacco: Acreage, yield, and production, by types and districts, 1925 and 1926*—Continued

Class and type	U. S. type No.	Acreage		Yield per acre		Production		Price per pound		Farm value		Value per acre	
		1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926
CIGAR TYPES—continued													
Class 5, binder types:													
Connecticut Valley—		*Acres*	*Acres*	*Pounds*	*Pounds*	*1,000 pounds*	*1,000 pounds*	*Cents*	*Cents*	*1,000 dols.*	*1,000 dols.*	*Dollars*	*Dollars*
Broadleaf	51	18,070	12,450	1,402	1,403	25,328	17,462	18.9	26.0	4,789	4,536	265.02	364.34
Havana seed	52	15,230	10,390	1,318	1,494	20,067	15,527	16.1	27.5	3,228	4,269	211.95	410.88
New York—													
Havana seed	53	2,000	2,000	1,100	1,100	2,200	2,200	19.0	19.0	418	418	209.00	209.00
Pennsylvania Havana seed	53	1,300	1,000	1,293	1,293	1,600	1,290	20.1	20.2	322	261	247.69	261.00
Wisconsin—													
Southern	54	19,000	17,000	1,392	1,150	26,445	19,550	13.0	12.0	3,438	2,346	180.95	138.00
Northern	55	13,000	12,000	1,350	1,150	17,555	13,800	15.0	14.0	2,633	1,932	202.54	161.00
Total binder types		68,600	54,840	1,358.5	1,273.3	93,195	69,829	15.9	19.6	14,828	13,762	216.15	250.95
Class 6, wrapper types:													
Connecticut Valley shade	61	4,580	5,210	1,052	1,004	4,818	5,231	100.0	97.7	4,818	5,116	1,051.97	961.96
Georgia-Florida shade	62	1,900	1,800	1,060	1,069	2,014	1,923	65.0	65.0	1,309	1,250	688.95	694.44
Connecticut Valley primed Havana seed	65	320	350	1,550	1,537	496	538	21.0	40.0	104	215	325.00	614.29
Total wrapper types		6,800	7,360	1,077.6	1,045.1	7,328	7,692	85.0	89.0	6,231	6,581	916.32	894.16
Total all cigar types		153,000	123,500	1,287.2	1,171.5	196,941	144,685	16.0	18.9	31,455	27,297	205.59	221.03
Grand total all types		1,757,300	1,664,700	783.4	795.0	1,376,628	1,323,388	17.0	18.5	234,253	245,154	133.30	147.27

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NOTE.—The prices and values shown for 1926 are preliminary and subject to revision. In some districts, notably those of western Kentucky and Tennessee, so few sales have been made that the ultimate trend of prices for the sales season is conjectural. Prices shown for 1925 are average for the season.

TABLE 340.—*Tobacco: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*

Country	Acreage					Yield per acre					Production				
	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926, Preliminary	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926, Preliminary	Average 1909–1913 [1]	Average 1921–1925	1924	1925	1926, Preliminary
NORTHERN HEMISPHERE															
NORTH AMERICA, CENTRAL AMERICA, AND WEST INDIES	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Canada	[2] 15	23	21	28	33	[1] 1,004	943	891	1,045	873	[2] 15,066	21,694	18,711	29,266	28,824
United States	1,223	1,692	1,706	1,757	1,665	814	764	733	784	795	996,087	1,291,922	1,251,343	1,376,628	1,323,388
Mexico		[2] 21		28			[2] 994		667		[2] 29,096	19,545	14,000	18,679	
Guatemala		1	(3)	1			554	1,110	466		[4] 256	554	455	466	
Cuba											[5] 73,666	[5] 54,227	[5] 84,000	[5] 51,000	[5] 63,000
Dominican Republic		[6] 30	[5] 30				[6] 967	967			[4] 25,417	[5] 24,798	[5] 29,000	[5] 45,000	[5] 17,500
Porto Rico	[7] 19	35	40	34	50	[6] 489	663	700	676	700	[6] 10,828	23,218	28,000	23,000	35,000
EUROPE															
Sweden	[2] 1	1	1	1		[2] 1,507	1,429	1,299	1,733		1,744	1,429	1,299	1,733	
Belgium	10	6	7	8	7	2,077	1,966	2,147	2,116	1,741	20,767	11,796	15,031	16,925	12,187
France	41	39	43	40	24	1,307	1,629	1,833	1,733	1,051	53,598	63,535	78,829	69,308	25,228
Italy	20	72	84	101	98	1,148	963	1,085	915	999	22,964	69,318	91,105	92,374	97,886
Switzerland	1	(3)	(3)	(3)	(3)	1,266	1,585	1,587	1,675		1,266	807	794	838	794
Germany	32	23	24	20	16	2,004	1,907	1,977	2,095		64,116	43,862	47,452	41,902	
Czechoslovakia	8	7	10	10	14	1,183	1,177	1,272	1,516	1,190	9,467	8,242	12,720	15,160	16,654
Hungary	93	41	38	38	49	1,203	881	1,001	992		111,883	36,121	38,045	37,699	
Yugoslavia	35	49	87	37		912	777	904	719		31,920	38,049	78,671	26,590	
Greece	[6] 76	131	148	203		776	672	510	637		[6] [illegible]8,987	88,083	75,469	129,245	122,080
Bulgaria	36	107	122	126	74	651	769	889	714	715	23,435	82,269	108,447	89,948	52,910
Rumania	[7] 53	62	77	91	75	909	502	614	397		[7] 48,174	31,121	47,290	36,089	
Poland	8	[7] 2	2	2		1,091	875	698	938		8,725	[7] 1,749	1,397	1,875	5,071
Russia	167	[4] 155	133	211		1,378	[4] 1,127	1,168	967		230,142	[7] 131,721	155,283	204,038	

[1] Averages for European countries are estimates for territory within present boundaries.
[2] Two-year average.
[3] Less than 500 acres.
[4] Three-year average.
[5] Unofficial estimate.
[6] One year only.
[7] Four-year average.

TABLE 340.—*Tobacco: Acreage, yield per acre, and production in specified countries, average 1909–1913, 1921–1925, annual 1924–1926*—Continued

Country	Acreage: Average 1909–1913	Acreage: Average 1921–1925	Acreage: 1924	Acreage: 1925	Acreage: 1926, Preliminary	Yield per acre: Average 1909–1913	Yield per acre: Average 1921–1925	Yield per acre: 1924	Yield per acre: 1925	Yield per acre: 1926, Preliminary	Production: Average 1909–1913	Production: Average 1921–1925	Production: 1924	Production: 1925	Production: 1926, Preliminary
NORTHERN HEMISPHERE—Contd.															
NORTH AFRICA	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Algeria	25	58	73	81	62	924	857	906	804	782	23,097	49,699	66,138	65,153	48,500
Tunis	([3])	1	1	1	1	1,209	919	860	1,212		266	919	860	1,212	882
French West Africa		[4] 14	17	9			369	391	370			[4] 5,170	6,640	3,333	
ASIA															
Turkey					182					484	[5 6] 88,180	[7] 92,310	[5] 170,000	[5] 104,500	88,000
Persia												[8] 23,000	[8] 23,000	[8] 23,000	[8] 23,000
Palestine		2	7	3	[5] 2		826	494	423	612		1,653	3,457	1,270	1,224
Greater Lebanon	[5] 2	2	2	2	2	[6] 180	[7] 670	794	893	893	[6] 360	[7] 1,339	1,587	1,786	1,786
British India	1,057	[4] 1,319									[6 9] 450,000				
Ceylon	14	[7] 13	12				[4] 798	834				[4] 10,006	10,009		
Japan	72	94	95	91	91	1,302	1,483	1,480	1,454	1,576	93,717	139,445	140,567	132,278	143,422
Chosen (Korea)	51	35	40	31		500	762	804	723		25,510	26,673	32,173	22,423	
Taiwan (Formosa)	1	3	2	2		1,120	1,112	1,418	1,102		1,120	3,335	2,836	2,204	
Siam	26	[7] 24	23				587	810				[7] 14,095	18,631		
Philippine Islands	154	178	178	177		422	497	537	522		65,005	88,523	95,509	92,377	
SOUTHERN HEMISPHERE															
SOUTH AMERICA															
Chili	[4] 2	[4] 4				2,672	[4] 2,130				[7] 4,493	[4] 8,522			
Brazil		[4] 172	166				[4] 819	785			[6] 110,000	150,081	130,311	[5] 139,000	
Uruguay	3	([3 4])				1,046	[4] 873				3,137	[4] 286			
Paraguay	[7] 17	[7] 29	29			[7] 1,050	[7] 884	953			[7] 17,844	22,489	[5] 27,646	[5] 9,921	
Argentina	27	[7] 24	21			408	652	973			12,635	[7] 15,653	20,432		
SOUTH AFRICA															
French Equatorial Africa		[7] 8	10				76	77				[7] 607	772		
Belgian Congo		[7] 2	2				419	352				[7] 838	705		
Union of South Africa	[6] 19	[4] 20				787	[4] 515				[6] 14,961	[7] 11,153	13,721		
Southern Rhodesia [10]	[7] 4	[7] 9	8			[7] 498	[7] 341	301			[7] 1,992	3,655	2,406	6,000	

Nyasaand	7	20	21	22	----	431	339	404	377	----	3,017	6,784	8,488	8,288	----
Madagascar	[4] 9	[7] 13	14	15	----	[4] 467	[4] 1,414	1,417	1,323	----	[4] 4,203	[4] 18,725	19,842	19,842	----
OCEANIA															
Dutch East Indies:															
Java and Madura	466	390	533	408	----	[10] 796	[10] 762	[10] 736	[10] 930	----	[11] 218,733	[11] 151,308	[11] 194,873	[11] 167,262	----
Sumatra (East Coast)	----	42	47	46	----	----	858	852	861	----	46,278	36,028	40,044	39,593	40,565
British North Borneo	----	1	2	1	----	----	1,163	672	824	----	----	1,163	1,344	824	----
Australia	2	[4] 3	----	----	----	1,068	[4] 727	----	----	----	2,135	[7] 2,197	----	2,240	----
Total all countries reporting acreage or production all years shown	1,650	2,262	2,343	2,428	2,261	----	----	----	----	----	1,572,171	2,061,398	2,214,042	2,285,089	2,123,677
Estimated world total, exclusive of India and China [12]	----	----	----	----	----	----	----	----	----	----	2,671,000	2,946,000	3,280,000	3,281,000	----

Division of Statistical and Historical Research Official sources and International Institute of Agriculture except as otherwise stated. Figures refer to the crop harvested in the calendar year in the Northern Hemisphere and the succeeding harvest in the Southern Hemisphere.

[3] Less than 500 acres.
[4] Three-year average.
[5] Uuofficial estimate.
[6] One year only.
[7] Four-year average.
[8] Rough unofficial estimate of annual production.
[9] Unofficial estimate for production in British India.
[10] Cultivation by Europeans only.
[11] These figures include a rough estimate of the crop produced by natives on the basis of an average yield of 4 piculs per bouw (311 pounds per acre), as quoted by former Trade Commissioner J. F. Van Wickel, Batavia, Java To this figure is added the official estimate of production by Europeans.
[12] No reliable data are available on production in India or China. The acreage devoted to tobacco in India would indicate a production next to that of the United States in the size of the crop. China is also of considerable importance.

TABLE 341.—*Tobacco: Estimated price per pound received by producers, December 1, average 1921–1925; annual 1921–1926*

State	Av. 1921–1925	1921	1922	1923	1924	1925	1926	State	Av. 1921–1925	1921	1922	1923	1924	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*		*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Mass	32.1	36.0	37.8	43.8	26.8	16.0	35.0	W. Va	21.5	24.0	22.0	22.0	21.4	18.2	19.0
Conn	35.8	41.0	40.3	46.5	32.3	19.0	37.0	N. C	25.6	26.0	30.3	23.1	25.8	23.0	26.4
N. Y	24.1	19.3	37.0	20.0	22.3	22.0	19.0	S. C	17.4	11.0	23.0	19.0	17.0	17.0	23.3
Pa	15.8	14.4	16.0	18.1	15.7	15.0	10.5	Ga	24.7	25.0	26.0	31.0	26.6	15.0	24.0
Ohio	16.6	15.0	19.0	14.4	19.4	15.0	11.9	Fla	41.3	40.0	47.0	50.9	37.6	31.0	34.7
Ind	16.1	15.0	17.0	14.0	16.6	18.0	10.0	Ky	16.9	15.5	19.5	16.6	17.1	16.0	11.4
Wis	14.6	12.5	20.0	11.0	13.0	16.5	12.8	Tenn	18.4	20.0	22.0	14.3	18.6	17.0	9.4
Mo	25.8	20.0	29.0	28.0	25.0	27.0	20.0	La	54.0	55.0	55.0	50.0	55.0	55.0	45.0
Md	22.1	19.0	17.5	28.1	26.9	19.0	21.6								
Va	20.2	20.5	24.0	19.6	21.4	15.6	19.2	U. S	20.4	19.9	23.2	19.9	20.7	18.2	18.5

Division of Crop and Livestock Estimates.

TABLE 342.—*Tobacco (unmanufactured): International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Algeria	4,776	11,681	8,596	17,516	10,573	30,112	6,964	24,625
Brazil	620	59,991	2,030	79,976	2,690	64,674		76,971
British India	6,538	28,874	9,205	37,891	12,434	53,084	[1] 6,693	[1] 33,600
Bulgaria	(2)	4,310		37,808		69,963		74,179
Ceylon		4,093	4	2,951	2	4,159	2	2,852
Cuba	141	38,035	(2)	28,809		31,660		
Dominican Republic		22,395		35,976		34,745		49,075
Dutch East Indies	8,074	163,823	1,174	115,736	2,703	151,744	[3] 5,962	[3] 165,035
Greece	12,024	18,113	57	47,104	45	92,225		
Hungary			2,814	5,738	4,725	8,966	4,602	4,664
Paraguay		11,361	99	17,970		14,295		[4] 2,838
Philippine Islands	45	26,018	132	55,736	269	49,505	531	38,420
Russia	1,084	23,283						
United States	52,768	381,127	57,670	497,347	68,589	575,398	77,690	477,488
PRINCIPAL IMPORTING COUNTRIES								
Argentina	14,988	41	28,183	475	13,346	4,136	20,131	279
Australia	13,740	(2)	[5] 26,234		[5] 19,111	[5] 36		
Austria			30,101	81	18,606	1,484	25,682	1,392
Austria-Hungary	49,984	23,192						
Belgium	22,094	33	41,454	848	45,969	114	43,389	111
Canada	17,891	433	13,966	1,837	18,035	4,313	14,848	2,516
China	15,113	25,487	42,042	29,697	90,344	27,764	73,558	27,495
Czechoslovakia			39,480	23	40,687	(2)	45,551	
Denmark	8,774	100	11,883	1,189	9,578	39	10,043	
Egypt	19,005		15,845	(2)	16,356	1	16,709	(2)
Finland	9,597		6,339		7,259		6,686	
France	63,914	26	65,019	775	58,537	625	99,732	551
Germany	168,437	116	146,579	633	230,098	522	270,225	578
Irish Free State					9,908	442	9,309	228
Italy	47,732	3,008	41,304	869	35,712	2,531	25,609	6,980
Japan	1,707	696	4,296	2,298	18,724	4,532	9,920	3,655
Netherlands	57,218	3,786	62,847	5,395	65,898	5,549	67,604	3,225
Norway	3,994		5,944		5,457		4,353	
Poland			26,263	753	29,605	247	49,042	31
Portugal	6,565	279	9,533		9,561			
Spain	51,026		71,200		85,583		56,448	
Sweden	9,772	1	9,813	598	12,598	883	9,022	157
Switzerland	17,949	47	22,986		4,281		9,854	1
United Kingdom	117,956	4,603	158,404	8,682	162,947	7,520	176,598	5,011
Other countries	43,403	73,657	48,512	38,009	47,139	19,368	37,235	8,105
Total	846,929	928,609	1,010,008	1,072,720	1,157,429	1,260,636	1,183,992	1,010,062

Division of Statistical and Historical Research. Official sources. Tobacco comprises leaf, stems, and strippings, but not snuff.

[1] Sea trade only.
[2] Less than 500 pounds.
[3] Java and Madura only.
[4] Three months.
[5] Year beginning July 1.

TABLE 343.—*Coffee: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Brazil	--------	1,672,282	--------	1,913,512	--------	1,881,888	--------	1,783,080
British India	[1] 605	27, 780	5, 486	22, 424	3, 126	23, 435	2, 540	29, 003
Colombia	--------	104, 398	(2)	272, 576	1	293, 109	--------	257, 722
Costa Rica	--------	27, 515	--------	24, 455	--------	40, 147	--------	33, 847
Dutch East Indies	4, 227	54, 149	663	85, 116	3, 455	160, 899	3, 462	153, 607
Guatemala	--------	85, 951	--------	96, 748	--------	89, 855	--------	97, 987
Haiti	--------	61, 943	--------	79, 031	--------	64, 820	--------	67, 829
Jamaica	--------	8, 263	--------	8, 633	--------	[3] [illegible], 815	--------	[3] 11, 650
Mexico	[1] 167	48, 991	2, 630	38, 733	4, 463	31, 744	[4] 864	[3] 53, 150
Nicaragua	[5] 138	19, 033	[3] 90	30, 231	--------	39, 677	--------	23, 859
Salvador	[6] 1, 593	62, 830	(2)	92, 580	(2)	107, 604	--------	70, 689
Venezuela	--------	111, 326	--------	102, 366	--------	120, 271	--------	118, 254
PRINCIPAL IMPORTING COUNTRIES								
Argentina	28, 125	--------	45, 140	--------	55, 788	--------	44, 286	--------
Austria	--------	--------	11, 880	13	15, 828	[3] 26	14, 891	[3] 9
Austria-Hungary	128, 304	8	--------	--------	--------	--------	--------	--------
Belgium	111, 738	33, 627	91, 015	1, 203	89, 282	1, 188	85, 181	533
British Malaya	[3] 7, 524	[3] 7, 137	21, 133	14, 508	16, 494	10, 893	18, 912	11, 825
Canada	13, 378	55	20, 818	27	22, 810	42	21, 185	55
Cuba	24, 906	4	36, 744	1	35, 920	1	--------	--------
Czechoslovakia	--------	--------	31, 082	13	32, 371	[3] 1	28, 136	[4] 3
Denmark	33, 102	152	48, 825	120	51, 108	103	45, 243	183
Egypt	15, 654	--------	22, 461	26	24, 257	138	17, 179	24
Finland	28, 624	--------	31, 448	--------	37, 039	--------	41, 712	--------
France	245, 752	41	379, 396	822	376, 791	779	370, 659	361
Germany	399, 965	1, 757	85, 414	109	122, 221	139	200, 329	359
Hungary	--------	--------	2, 632	144	4, 379	60	5, 895	(2)
Italy	58, 278	458	105, 963	10	103, 574	22	93, 071	10
Netherlands	283, 633	189, 288	115, 563	46, 951	141, 899	58, 199	133, 713	45, 767
Norway	29, 309	--------	38, 205	--------	35, 552	--------	31, 974	--------
Poland	--------	--------	12, 470	(2)	13, 397	1	15, 644	1
Russia	26, 073	--------	[3] 469	--------	[3] 2, 459	--------	[3] 2, 958	--------
Spain	29, 317	9	53, 773	7	49, 536	11	42, 846	1
Sweden	74, 486	24	92, 812	102	95, 543	41	80, 502	3
Switzerland	25, 029	62	28, 272	60	32, 453	72	24, 054	91
Union of South Africa	26, 458	36	32, 934	12	30, 724	16	29, 001	8
United Kingdom	28, 581	241	[7] −32,697	156	32, 251	212	49, 559	216
United States	907, 899	[8] 44, 251	1,409,755	26, 367	1,420,870	28, 731	1,283,695	25, 207
Yugoslavia [3]	--------	--------	20, 235	46	18, 382	5	22, 654	19
Other countries	81, 989	46, 736	156, 734	106, 792	163, 272	123, 969	127, 160	73, 396
Total	2,614,854	2,608,347	2,871,345	2,963,894	3,035,245	3,083,913	2,836,705	2, 858, 748

Division of Statistical and Historical Research. Compiled from official sources except where otherwise noted.

The item coffee comprises unhulled and hulled, ground or otherwise prepared, but imitation or "surrogate" coffee and chicory are excluded.

[1] Four-year average.
[2] Less than 500 pounds.
[3] International Yearbook of Agricultural Statistics.
[4] Six months.
[5] Three-year average.
[6] One year only.
[7] Reexports in excess of imports.
[8] Chiefly from Porto Rico.

TABLE 344.—*Coffee, Rio No. 7: Average wholesale price per pound, New York, 1920–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average [1]
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Av. 1921–1925	12.5	13.1	13.2	12.8	12.4	13.1	12.8	13.0	13.5	13.9	14.3	14.2	13.2
1920	16.3	14.8	15.0	15.1	15.6	15.0	13.1	9.4	8.2	7.6	7.5	6.6	12.0
1921	6.7	6.7	6.4	6.0	6.2	6.7	6.5	7.0	7.9	8.1	8.8	9.3	7.2
1922	9.6	9.0	9.6	10.8	11.0	11.0	10.4	10.0	10.2	10.2	10.8	11.1	10.3
1923	11.9	13.0	13.0	11.5	11.6	11.7	10.9	10.7	10.7	11.1	11.0	10.9	11.5
1924	10.9	14.2	15.6	15.3	14.8	14.6	16.5	16.6	17.7	20.7	22.6	22.6	16.8
1925	23.4	22.4	21.2	20.2	18.6	21.6	19.7	20.7	21.2	19.5	18.5	17.1	20.3
1926	18.5	19.1	18.2	18.3	19.8	20.1	19.8	19.2	17.7	16.1	16.3	15.3	18.2

Division of Statistical and Historical Research. Compiled from Bureau of Labor Statistics reports. Data for 1890–1919 are available in 1924 Yearbook, p. 832, Table 426.

[1] Derived from the figures upon which the monthly averages are based.

TABLE 345.—*Tea: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31: Average, 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
British India	8,002	267,887	17,713	331,611	19,930	353,557	[1] 7,536	347,045
Ceylon	[2] 1	189,016	1	181,940	([3])	204,930	1	209,791
China	18,890	197,997	129	99,492	5,072	94,211	3,211	108,875
Dutch East Indies	6,742	46,675	6,602	104,871	7,090	121,586	[4] 7,336	[4] 87,685
Formosa	68	23,640	82	21,205	58	20,745	[5] 29	[5] 21,296
Japan	590	35,823	1,684	27,359	1,267	24,036	771	28,041
PRINCIPAL IMPORTING COUNTRIES								
Argentina	3,890		3,772		4,379		4,071	
Australia	35,442	([3])	[6] 48,502		[6] 49,256		[5] 49,935	
Austria			955	2	1,463	[5] 2	875	[3,5]
Austria-Hungary	3,424	3						
British Malaya	[5] 11,983	[5] 5,318	8,227	1,394	8,425	1,241	9,127	1,290
Canada	37,927		41,289		35,861		37,392	
Chile	3,505		5,228		4,740		5,317	
Czechoslovakia			1,165	2	1,423	([3])	1,422	([3])
Egypt	1,950		6,602	239	8,156	274	9,644	221
France	2,806	61	2,985	237	3,662	171	3,859	125
French Indo-China	3,295	1,145	[5] 3,836	[5] 1,933	[5] 4,036	[5] 1,668	[5] 4,060	[5] 2,282
Germany	8,964	23	5,463	10	8,954	6	9,153	1
Hungary			416	16	538	4	49	1
Irish Free State					24,300		22,611	
Morocco	6,696		8,224	1	10,556		12,020	
Netherlands	11,383	45	35,468	15	23,933	29	19,949	26
New Zealand	7,542		9,968		10,737		10,835	
Persia	9,446	125	12,967	2,422	14,502	2,596		
Poland			5,313	127	3,201	43	3,717	3
Russia	157,704	866	[5] 5,142	[5] 105	[5] 17,558	[5] 650	[5] 37,138	[5] 1,769
Union of South Africa	5,192	61	8,963	133	9,407	10	9,815	8
United Kingdom	293,045		392,531		434,621		402,156	
United States	98,897		105,138		92,773		100,962	
Other countries	31,268	7,237	40,716	6,765	49,468	23,262	36,990	8,925
Total	768,652	775,922	779,081	779,879	855,476	849,021	809,981	817,384

Division of Statistical and Historical Research. Official sources except where otherwise noted. "Tea" includes tea leaves only, and excludes dust, sweepings, and yerba mate.

[1] Sea trade only.
[2] Two-year average.
[3] Less than 500 pounds.
[4] Java and Madura only.
[5] International Yearbook of Agricultural Statistics.
[6] Year beginning July 1.

TABLE 346.—*Tea, Formosa, fine: Average wholesale price per pound, New York, 1920–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average[1]
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
Av. 1921–1925	30. 3	30. 3	30. 3	30. 2	29. 9	29. 8	29. 8	29. 8	30. 0	30. 4	31. 6	32. 3	30. 4
1920	36. 5	36. 5	36. 5	36. 5	36. 5	36. 5	36. 5	34. 3	31. 0	31. 0	28. 6	23. 8	33. 7
1921	24. 5	24. 5	24. 5	24. 1	22. 4	22. 0	22. 0	22. 0	22. 3	23. 0	28. 0	29. 0	24. 0
1922	30. 0	30. 0	30. 0	30. 0	30. 0	30. 0	30. 0	30. 0	30. 5	30. 5	31. 0	31. 0	30. 2
1923	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0
1924	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 0	31. 3	32. 5	32. 9	35. 0	31. 7
1925	35. 0	35. 0	35. 0	35. 0	35. 0	35. 0	35. 0	35. 0	35. 0	35. 0	35. 0	35. 3	35. 0
1926	35. 5	35. 5	35. 5	35. 5	35. 5	35. 5	35. 5	35. 5	35. 5	35. 5	35. 5	35. 0	35. 5

Division of Statistical and Historical Research. Compiled from Bureau of Labor Statistics reports. Data for 1890–1919 are available in 1924 Yearbook, p. 834, Table 427.

[1] Derived from the figures upon which the monthly averages are based.

TABLE 347.—*Oil cake and oil-cake meal: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	--------	42, 587	--------	78, 876	--------	102, 113	--------	98, 270
Australia	148	1, 347	[1] 518	[1] 5, 860	[1] 33	[1] 16, 857	--------	--------
Austria-Hungary	53, 673	124, 873	--------	--------	--------	--------	--------	--------
Brazil	--------	[2] 6, 574	--------	24, 196	--------	31, 960	--------	--------
British India	1, 262	268, 648	2, 226	350, 679	1, 844	446, 866	[3] 157	[3] 437, 179
Canada	7, 752	51, 370	3, 548	40, 114	6, 124	34, 303	8, 774	46, 397
China	[4] 174	147, 468	--------	196, 085	--------	188, 903	--------	259, 092
Czechoslovakia	--------	--------	26, 522	35, 065	48, 611	41, 098	46, 672	48, 800
Dutch East Indies	2, 509	13, 242	--------	42, 361	--------	53, 190	--------	[5] 75, 290
Egypt	--------	161, 624	--------	267, 508	--------	260, 478	3	287, 698
France	288, 968	476, 863	128, 237	328, 003	113, 479	298, 448	53, 005	252, 003
Germany	1, 686, 416	525, 108	90, 202	521, 098	285, 465	457, 647	749, 836	718, 287
Hungary	--------	--------	327	8. 731	--------	--------	636	9, 853
Italy	10, 550	55, 115	752	147, 911	290	282, 805	1, 085	180, 812
Peru	--------	10, 930	--------	35, 695	--------	48, 684	--------	51, 657
Russia	--------	1, 453, 413	--------	498, 357	--------	707, 811	--------	808, 927
Spain	--------	2, 164	147	15, 157	708	18, 814	3, 504	29, 904
United States	--------	1, 704, 124	124, 124	917, 394	154, 572	1, 289, 948	88, 535	1, 487, 756
PRINCIPAL IMPORTING COUNTRIES								
Austria	--------	--------	7, 016	2, 420	12, 532	921	18, 988	2, 002
Belgium	543, 648	155, 373	215, 640	73, 509	261, 845	63, 004	323, 070	54, 803
Ceylon	[6] 40, 494	[6] 28, 509	41, 830	13, 056	43, 072	17, 533	44, 720	18, 918
Denmark	1, 002, 329	15, 777	1, 241, 054	5, 799	1, 547, 660	18, 833	1, 646, 774	--------
Finland	25, 333	2, 125	107, 415	144	89, 420	--------	147, 192	--------
Irish Free State	--------	--------	--------	--------	118, 041	--------	126, 521	--------
Japan	189, 868	--------	332, 319	10, 619	322, 879	21, 720	356, 821	20, 083
Netherlands	707, 116	219, 819	493, 590	95, 195	574, 900	79, 046	572, 491	98, 923
Norway	55, 112	2, 889	84, 798	169	86, 299	663	100, 042	--------
Sweden	346, 755	1, 535	246, 640	4, 748	276, 096	5, 546	207, 332	12, 203
Switzerland	69, 342	1, 413	85, 908	1. 243	87, 487	6, 651	91, 071	7, 117
United Kingdom	790, 865	161, 798	697, 894	111, 964	802, 285	201, 620	1, 013, 179	131, 006
Other countries	30, 172	41, 595	41, 127	9, 523	45, 581	25, 292	37, 552	60, 878
Total	5, 852, 496	5, 676, 283	3, 971, 834	3, 851, 079	4, 879, 223	4, 720, 759	5, 637, 960	5, 107, 858

Division of Statistical and Historical Research. Official sources.

The class called here "oil cake and oil-cake meal" includes the edible cake and meal remaining after making oil from such products as cottonseed, flaxseed, peanuts, corn, etc. Soy-bean cake is not included in this table.

[1] Year beginning July 1.
[2] Four-year average.
[3] Sea trade only.
[4] Three-year average.
[5] Java and Madura only.
[6] One year only.

TABLE 348.—*All cattle and calves, including cows and heifers kept for milk: Estimated number and value on farms, by States, Jan. 1, 1925–1927*

State	Number Jan. 1			Value per head Jan. 1			Total value Jan. 1		
	1925	1926	1927 [1]	1925	1926	1927	1925	1926	1927 [1]
	Thousands	*Thousands*	*Thousands*	*Dollars*	*Dollars*	*Dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Maine	241	235	233	41.90	51.40	52.20	10,107	12,078	12,153
New Hampshire	125	119	117	47.50	57.30	66.30	5,935	6,820	7,755
Vermont	403	401	402	46.00	56.80	63.20	18,516	22,774	25,395
Massachusetts	195	187	185	63.10	74.20	77.80	12,300	13,867	14,388
Rhode Island	27	27	27	70.40	76.60	85.70	1,901	2,067	2,314
Connecticut	160	151	147	66.10	78.10	82.80	10,573	11,795	12,173
New York	1,852	1,824	1,811	53.20	68.00	74.40	98,482	124,066	134,830
New Jersey	154	154	157	68.40	85.00	94.80	10,541	13,095	14,880
Pennsylvania	1,318	1,298	1,283	51.30	60.60	64.80	67,567	78,634	83,173
Ohio	1,675	1,642	1,630	46.10	51.80	55.10	77,229	85,038	89,788
Indiana	1,282	1,282	1,308	45.00	50.10	50.80	57,717	64,280	66,456
Illinois	2,345	2,251	2,048	44.50	51.30	53.30	104,440	115,470	109,244
Michigan	1,406	1,420	1,406	46.80	50.80	56.60	65,862	72,096	79,625
Wisconsin	3,035	3,005	2,975	44.40	53.70	59.90	134,664	161,502	178,092
Minnesota	2,853	2,853	2,739	37.30	43.20	45.70	106,498	123,114	125,165
Iowa	4,372	4,241	4,029	39.60	44.30	47.20	173,323	187,744	190,055
Missouri	2,442	2,369	2,298	33.40	36.70	38.70	81,433	86,852	89,014
North Dakota	1,341	1,260	1,146	28.90	32.80	34.30	38,695	41,290	39,322
South Dakota	2,074	1,919	1,727	30.60	34.20	37.10	63,366	65,619	64,093
Nebraska	3,314	3,191	2,872	33.60	37.00	40.50	111,228	118,083	116,417
Kansas	3,068	2,853	2,625	31.60	35.90	38.90	96,997	102,541	102,125
Delaware	46	48	48	53.50	57.30	66.10	2,460	2,751	3,172
Maryland	273	270	265	50.90	55.60	58.90	13,888	15,005	15,617
Virginia	827	744	707	33.00	34.00	36.70	27,263	25,268	25,977
West Virginia	591	526	484	33.30	36.30	39.20	19,692	19,109	18,992
North Carolina	545	523	513	29.80	31.60	35.60	16,232	16,520	18,243
South Carolina	341	300	300	24.90	25.50	28.50	8,494	7,640	8,556
Georgia	938	854	880	18.30	19.10	21.80	17,145	16,295	19,144
Florida	656	630	592	18.20	20.30	16.90	11,948	12,799	10,007
Kentucky	938	910	910	28.70	33.20	37.70	26,960	30,257	34,331
Tennessee	1,023	921	912	22.20	25.20	30.40	22,727	23,177	27,740
Alabama	840	739	746	16.30	19.00	21.80	13,679	14,052	16,284
Mississippi	938	845	853	15.00	17.60	21.00	14,103	14,916	17,873
Arkansas	837	795	795	16.00	19.20	21.80	13,377	15,259	17,316
Louisiana	720	648	616	19.40	20.10	21.80	13,995	13,030	13,420
Oklahoma	1,695	1,610	1,723	22.10	27.30	32.20	37,397	43,907	55,456
Texas	6,275	5,900	6,136	21.90	22.80	28.60	137,555	134,484	175,775
Montana	1,340	1,280	1,190	30.30	32.00	34.60	40,572	40,920	41,109
Idaho	650	624	605	28.90	38.20	39.80	18,800	23,856	24,090
Wyoming	795	787	771	29.20	34.90	39.80	23,232	27,462	30,658
Colorado	1,465	1,377	1,391	26.60	32.90	36.60	38,894	45,256	50,918
New Mexico	1,290	1,213	1,189	22.30	26.30	31.00	28,760	31,933	36,887
Arizona	1,069	863	705	26.20	34.90	35.60	28,052	30,129	25,112
Utah	507	482	472	28.00	36.90	40.10	14,205	17,794	18,906
Nevada	419	385	366	25.70	36.40	39.20	10,760	14,024	14,331
Washington	582	558	544	45.40	45.90	50.00	26,397	25,606	27,696
Oregon	796	716	687	35.30	38.60	42.00	28,073	27,620	28,830
California	1,918	1,918	1,956	43.40	48.20	50.00	83,199	92,372	97,696
United States	61,996	59,148	57,521	33.63	38.72	42.26	2,085,224	2,290,275	2,430,593

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 349.—*Milk cows and heifers: Estimated number and value on farms, by States, Jan. 1, 1925–1927*

State	Cows and heifers 2 years old and over kept for milk								
	Number Jan. 1			Value per head Jan. 1			Total value Jan. 1		
	1925	1926	1927 [1]	1925	1926	1927	1925	1926	1927 [1]
	Thousands	*Thousands*	*Thousands*	*Dollars*	*Dollars*	*Dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Maine	156	150	148	52.00	66.00	67.00	8,112	9,900	9,916
New Hampshire	85	80	78	59.00	72.00	85.00	5,015	5,760	6,630
Vermont	287	288	285	57.00	70.00	79.00	16,359	20,160	22,515
Massachusetts	148	140	138	75.00	90.00	95.00	11,100	12,600	13,110
Rhode Island	22	22	21	80.00	87.00	100.00	1,760	1,914	2,100
Connecticut	118	116	110	78.00	92.00	100.00	9,204	10,672	11,000
New York	1,383	1,362	1,318	62.00	80.00	90.00	85,746	108,960	118,620
New Jersey	123	123	119	75.00	95.00	110.00	9,225	11,685	13,090
Pennsylvania	889	862	845	61.00	74.00	80.00	54,229	63,788	67,600
Ohio	964	945	926	57.00	64.00	70.00	54,948	60,480	64,820
Indiana	679	665	645	57.00	62.00	64.00	38,703	41,230	41,280
Illinois	1,049	1,039	988	59.00	66.00	69.00	61,891	68,574	68,172
Michigan	850	858	841	60.00	64.00	73.00	51,000	54,912	61,393
Wisconsin	2,015	2,055	2,014	55.00	66.00	74.00	110,825	135,630	149,036
Minnesota	1,560	1,560	1,529	51.00	59.00	61.00	79,560	92,040	93,269
Iowa	1,341	1,341	1,314	58.00	63.00	66.00	77,778	84,483	86,724
Missouri	835	827	827	44.00	47.00	50.00	36,740	38,869	41,350
North Dakota	520	530	498	44.00	47.00	50.00	22,880	24,910	24,900
South Dakota	544	539	534	47.00	52.00	55.00	25,568	28,028	29,370
Nebraska	625	625	613	54.00	58.00	60.00	33,750	36,250	36,780
Kansas	760	730	715	49.00	52.00	55.00	37,240	37,960	39,325
Delaware	34	35	35	60.00	65.00	75.00	2,040	2,275	2,625
Maryland	184	182	178	60.00	66.00	70.00	11,040	12,012	12,460
Virginia	376	347	326	40.00	41.00	45.00	15,040	14,227	14,670
West Virginia	225	221	207	40.00	43.00	47.00	9,000	9,503	9,729
North Carolina	312	303	303	40.00	42.00	47.00	12,480	12,726	14,241
South Carolina	176	155	158	36.00	36.00	40.00	6,336	5,580	6,320
Georgia	354	340	343	30.00	30.00	36.00	10,620	10,200	12,348
Florida	70	74	78	54.00	50.00	40.00	3,780	3,700	3,120
Kentucky	473	464	464	37.00	41.00	47.00	17,501	19,024	21,808
Tennessee	462	434	425	31.00	34.00	41.00	14,322	14,756	17,425
Alabama	365	340	350	26.00	29.00	32.00	9,490	9,860	11,200
Mississippi	411	379	379	24.00	28.00	32.00	9,864	10,612	12,128
Arkansas	382	374	374	25.00	28.00	33.00	9,550	10,472	12,342
Louisiana	206	200	210	37.00	34.00	36.00	7,022	6,800	7,560
Oklahoma	582	570	581	34.00	40.00	47.00	19,788	22,800	27,307
Texas	985	936	973	33.00	34.00	45.00	32,505	31,824	43,785
Montana	187	192	188	50.00	54.00	54.00	9,350	10,368	10,152
Idaho	160	163	170	50.00	64.00	65.00	8,000	10,432	11,050
Wyoming	66	69	70	50.00	55.00	62.00	3,300	3,795	4,340
Colorado	224	224	224	45.00	50.00	56.00	10,080	11,200	12,544
New Mexico	64	64	64	45.00	46.00	48.00	2,880	2,944	3,072
Arizona	37	32	35	70.00	70.00	80.00	2,590	2,240	2,800
Utah	87	88	89	58.00	68.00	72.00	5,046	5,984	6,408
Nevada	19	20	20	60.00	75.00	80.00	1,140	1,500	1,600
Washington	283	275	264	65.00	66.00	74.00	18,395	18,150	19,536
Oregon	225	214	214	60.00	60.00	65.00	13,500	12,840	13,910
California	579	596	596	73.00	77.00	78.00	42,267	45,892	46,488
United States	22,481	22,148	21,824	50.67	57.37	62.41	1,139,159	1,270,521	1,361,968

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 350.—*Heifers 1 to 2 years old being kept for milk cows: Number Jan. 1, 1925–1927*

[Thousands—i. e., 000 omitted]

State	1925	1926	1927 [1]	State	1925	1926	1927 [1]	State	1925	1926	1927 [1]
Me.	31	31	31	S. Dak.	127	110	118	La.	44	37	41
N. H.	16	15	15	Nebr.	124	131	124	Okla.	127	101	112
Vt.	46	45	47	Kans.	148	133	120	Tex.	194	194	175
Mass.	19	18	18	Del.	5	5	5	Mont.	36	35	35
R. I.	2	2	2	Md.	25	24	25	Idaho.	38	38	40
Conn.	17	14	14								
N. Y.	182	168	178	Va.	55	48	48	Wyo.	14	15	14
N. J.	12	12	15	W. Va.	29	26	24	Colo.	48	47	47
Pa.	129	115	124	N. C.	56	49	56	N. Mex.	11	13	14
Ohio.	152	140	160	S. C.	37	30	30	Ariz.	10	8	10
Ind.	111	101	112	Ga.	84	73	84	Utah.	21	21	21
Ill.	189	164	180								
Mich.	146	149	153	Fla.	15	17	18	Nev.	6	6	6
Wis.	364	331	351	Ky.	65	61	67	Wash.	57	55	55
Minn.	306	300	321	Tenn.	88	74	82	Oreg.	44	44	44
Iowa.	273	245	245	Ala.	83	77	87	Calif.	132	137	137
Mo.	172	169	177	Miss.	87	77	82				
N. Dak.	127	122	124	Ark.	91	82	92	U. S.	4,195	3,909	4,080

Division of Crops and Livestock Estimates.

[1] Preliminary.

TABLE 351.—*Cattle: Numbers in countries having 150,000 or over, pre-war and years 1921–1926*

[Thousands—i. e., 000 omitted]

Countries	Month of estimate	Pre-war [1]	1921	1922	1923	1924	1925	1926
NORTH AMERICA								
Canada	June	6,551	10,206	9,720	9,246	9,461	9,307	9,160
United States [2]		58,676	67,184	67,264	66,156	64,507	61,996	[3] 59,148
Mexico	June	[4] *5,142*			[5] 2,363	[5] 2,188		5,121
CENTRAL AMERICA AND WEST INDIES								
Guatemala	July	557	297	319	246	233	245	564
Honduras (Republic of)		411	[6] 466					
Salvador		350						
Nicaragua		[7] *252*	1,200					
Costa Rica		*333*		477	426	404	433	
Cuba	December [8]	2,917		4,771	4,877	5,085	4,600	
Dominican Republic	May		647	577	635	701		
Porto Rico		*316*	[9] *279*		[5] 158	[5] 151	[5] 144	
Total North America, Central America, and West Indies, comparable all periods		65,784	77,687	77,303	75,648	74,201	71,458	68,872
Estimated total [10]		76,110	88,090	88,290	86,700	85,360	84,060	

Division of Statistical and Historical Research. Census returns are in italics; other returns are in roman.

[1] Average for five-year period if available, otherwise for any year or years within this period except as otherwise stated. In countries having changed boundaries the pre-war figures are estimates for one year only of numbers within present boundaries. For the pre-war average the years immediately preceding the war have been used.

[2] Revised estimated of Division of Crop and Livestock Estimates, 1921–1926. These figures are made on the basis of census figures of 1920 and 1925, of annual assessment data, and other information. The estimates prepared in the Bureau of Animal Industry by adjustment of the census figures to a Jan. 1 basis, and including all animals in towns and villages as well as on farms and ranges are as follows: Average, 58,900,000; 1921, 67,200,000; 1922, 67,700,000; 1923, 68,900,000; 1924, 68,200,000; and 1925, 66,600,000.

[3] The number of cattle on Jan. 1, 1927, is officially estimated at 57,521,000. No 1927 column has been added as so few estimates are available for that year up to date.

[4] Year 1902.

[5] Incomplete.

[6] Year 1918.

[7] Year 1908.

[8] Countries reporting as of December have been considered as of Jan. 1 of the following year, i. e., figures for number of cattle in France as of Dec. 31, 1920, have been put in the 1921 column.

[9] Year 1920.

[10] These totals include interpolations for a few countries not reporting each year and rough estimates for some others.

TABLE 351.—*Cattle: Numbers in countries having 150,000 or over, pre-war and years 1921–1926*—Continued

[Thousands—i. e., 000 omitted]

Countries	Month of estimate	Pre-war	1921	1922	1923	1924	1925	1926
SOUTH AMERICA								
Colombia		4,000	*9,428*			[11] 6,391		
Venezuela		2,004	2,600	2,778				
Ecuador			[11] 1,500					
Peru	February–April		[12] 1,000	1,302	1,293			
Bolivia		734					571	
Chile		1,780		1,996			1,918	
Brazil [3]	September	30,705	[9] *34,271*					
Uruguay		[7] *8,193*	[14] 7,802			*8,432*		
Paraguay	December [8]	4,422	[6] 5,500			[11] 4,000	[11] 4,300	
Argentina	do [8]	[15] *25,867*	([15])	([15])	*37,065*			
South America, estimated total [10]		80,300	(Estimated average, 1921–1925,[1] 101,540)					
EUROPE								
England and Wales	June	5,843	5,517	5,723	5,823	5,894	6,163	6,252
Scotland	do	1,203	1,143	1,147	1,194	1,164	1,205	1,196
Ireland	do	4,847	5,197	5,157	4,963	5,004	4,659	4,614
Norway [16]	do	[17] 1,134	1,095	(1,150)	1,131	1,114	1,151	1,200
Sweden	do	3,069	[9] 2,736					
Denmark	July	2,717	2,591	2,525	2,523	2,667	2,758	2,840
Holland	May–June	2,062	2,063					
Belgium	December [8]	1,925	1,487	1,515	1,517	1,603	1,628	1,655
France	do [8]	15,338	13,217	13,343	13,576	13,749	14,025	14,373
Spain	do [8]	2,587	3,397	*3,718*	3,297	3,435	3,436	3,794
Portugal		[18] *703*	[9] *741*				768	
Italy [13]	March–April	6,590	[6] 6,624			[11] 7,000		
Switzerland	April	1,443	*1,425*					1,587
Germany	December [8]	18,474	16,807	16,791	16,316	[19] 16,691	17,326	[20] 17,202
Austria	December–April	2,356	2,320		*2,162*			
Czechoslovakia	December [8]	4,596	*4,377*			[11] 4,607		4,691
Hungary	April	2,150		1,828	1,819	1,896	1,920	1,847
Yugoslavia [13]	January	5,155	*5,011*	4,090	3,902	3,813	3,796	
Greece [13]		665	689	766	684			
Bulgaria [13]	December [8]	2,048	*2,295*				1,560	
Rumania [13]		5,648	4,876	5,721	5,932	5,739	5,583	5,219
Poland		8,351	8,132			8,800		
Lithuania		918	849	1,021	1,285	1,252	1,339	
Latvia	June	912	800	810	*911*	905	916	955
Estonia		528	443	527	513	502	555	599
Finland	September	1,605	1,792	1,844	1,865	1,864		
Russia	Summer	30,132	29,750	27,747	33,042	37,717	39,669	
Total Europe, comparable all periods.		61,156	56,570	58,127	57,696	58,467	59,405	59,899
Estimated total [10]		133,140	127,320	126,640	131,720	137,660	140,000	

[1] Average for five-year period if available, otherwise for any year or years within this period except as otherwise stated. In countries having changed boundaries the pre-war figures are estimates for one year only of numbers within present boundaries. For the pre-war average the years immediately preceding the war have been used.

[3] The number of cattle on Jan. 1, 1927, is officially estimated at 57,521,000. No 1927 column has been added as so few estimates are available for that year up to date

[6] Year 1918.

[7] Year 1908.

[8] Countries reporting as of December have been considered as of Jan. 1 of the following year, i. e., figures for number of cattle in France as of Dec. 31, 1920, have been put in the 1921 column.

[9] Year 1920.

[10] These totals include interpolations for a few countries not reporting each year and rough estimates for some others.

[11] Unofficial.

[12] Year 1917.

[13] Buffaloes included.

[14] Year 1916.

[15] Pre-war figure census, June, 1914. Annual official estimates for 1921 and 1922 as follows: 1921, 27,943,000 and 1922, 28,138,000. These figures have not been used in table as 1922 census showed such a large increase that these estimates are probably too low.

[16] Numbers in rural communities only.

[17] September.

[18] Year 1906.

[19] No census was made as of December, 1923, which estimate would have been considered as of January, 1924, in this table, as explained in Note 8, so the figure for October, 1923, has been used.

[20] The number on Dec. 1, 1926, is officially estimated at 17,195,000. This would be placed in a 1922 column, as explained in Note 8. This column has not been added as so few figures are available for 1977 as yet.

Table 351.—*Cattle: Numbers in countries having 150,000 or over, pre-war and years 1921–1926*—Continued

[Thousands—i. e., 000 omitted]

Countries	Month of estimate	Pre-war	1921	1922	1923	1924	1925	1926
AFRICA								
Morocco		676	1,517	1,558	1,683	1,840	1,955	
Algeria	September	1,112	851	837	794	[21] 873	892	
Tunis		195	488	487	400	383	308	
French West Africa (excluding Sudan).			1,836	2,142				
French Sudan			1,019	1,025	1,215			
Nigeria			2,824	2,910	2,751	2,676	2,864	
French Cameroon				290	480			
Egypt [13]	September	1,316	1,242	1,201	1,291	1,416	1,400	
Anglo Egyptian Sudan			874	845	852	814	935	
Italian Somaliland	February		[9] *1,246*					
Eritrea (Italian)		517	[9] *458*	553				
Kenya Colony	March–June	754	2,559	2,814	3,190	3,211	3,417	
Uganda		556	682	920	1,227	1,372	1,342	
French Equatorial Africa			665	712	910	1,001		
Belgian Congo		500	500	500	510	485	480	
Portuguese East Africa (Mozambique)			236	271	303			
British Southwest Africa		206	*529*	586	550	567	572	
Bechuanaland		324	*495*					
Union of South Africa	April-May	5,797	*8,557*	9,201	*9,607*	*9,606*	9,738	
Basutoland		437	*581*	589	603	617	631	
Rhodesia:								
Northern	December [8]	255		231		251	286	
Southern	do [8]	509	1,517	*1,781*	1,801	1,921	2,009	
Swaziland		60	*211*	225	268	270		
Tanganyika Territory		1,489	*3,147*		3,800		4,472	
Madagascar	February	4,890	7,519	7,829	7,819	8,000		
Total Africa, comparable pre-war to 1925.		12,058	19,023	20,414	21,656	22,291	22,744	
Estimated totals [10]		27,370	(Estimated average,[1] 1921–1925, 45,630)					
ASIA								
Turkey, European and Asiatic.		[22] 6,438			3,551	4,622	4,622	
Persia							[11] 1,000	
Syria				241	195	255	250	
India: [13]								
British	December-April	128,451	145,103	145,000	146,216	146,498	150,952	
Native States	do	13,258	33,323	34,119	32,950	33,264	31,694	
Ceylon [13]		1,484	1,599	1,355	1,500	1,383		
Russia		15,609	[23] 9,115	[23] 7,278	[23] 10,275	13,703	[24] 14,069	
China (includes Turkestan and Manchuria).		21,997						
Japan	December [8]	1,385	1,376	1,440	1,459	1,469	1,456	
Chosen	do [8]	966	1,490	1,524	1,608	1,610	1,605	
Formosa [13]	do [8]	473	429	423	409	391	383	

[1] Average for five-year period if available, otherwise for any year or years within this period except as otherwise stated. In countries having changed boundaries the pre-war figures are estimates for one year only of numbers within present boundaries. For the pre-war average the years immediately preceding the war have been used.

[8] Countries reporting as of December have been considered as of Jan. 1 of the following year, i. e., figures for number of cattle in France as of Dec. 31, 1920, have been put in the 1921 column.

[9] Year 1920.

[10] These totals include interpolations for a few countries not reporting each year and rough estimates for some others.

[11] Unofficial.

[13] Buffaloes included.

[21] Excludes southern territory, where there were 15,580 cattle in 1923.

[22] In addition there were 832,163 buffaloes in pre-war times.

[23] Includes 2,048,000 cattle reported in Turkestan and Azerbaijan (part of Transcaucasia) in 1920. Exclusive of this territory the number for the different years are as follows: 1921, 7,067,000; 1922, 5,230,000; and 1923, 8,227,000.

[24] Includes 3,822,600 in Turkestan and Transcaucasia in 1924. Excluding this territory the number in 1924 is 10,247,000.

TABLE 351.—*Cattle: Numbers in countries having 150,000 or over, pre-war and years 1921–1926*—Continued

[Thousands—i. e., 000 omitted]

Countries	Month of estimate	Pre-war	1921	1922	1923	1924	1925	1926
ASIA—continued								
French Indo-China [13]		[14] 4,016	3,099	3,680				
Siam [13]		4,501	5,229	6,137	6,270	7,865	8,003	
Philippine Islands [13]		1,190	2,225	2,342	2,349	2,493	2,681	
Dutch East Indies:								
Java and Madura [13]	December [8]	5,091	5,029	5,060	5,269	5,421	5,656	
Outer possessions [13]	do [8]	1,640	1,602	1,874	1,948	1,944	1,991	
Total Asia, comparable pre-war to 1925.		172,504	204,921	205,206	208,753	214,658	218,490	
Estimated totals [10]		209,900	(Estimated average,[1] 1921-1925, 245,370)					
OCEANIA								
Australia	December [8]	11,535	13,500	14,441	14,[illegible]37	13,358	13,309	
New Zealand	January	*2,020*	3,129	3,323	3,481	3,563	3,470	3,452
Total, Oceania, comparable all periods		2,020	3,129	3,323	3,481	3,563	3,470	3,452
Estimated total [10]		13,750	16,820	17,960	18,020	17,130	17,000	
World total, comparable all periods		313,582	361,330	364,373	367,234	373,180	375,567	
Estimated world totals [10]		540,570	(Estimated average,[1] 1921–1925, 627,840)					

[1] Average for five-year period if available, otherwise for any year or years within this period except as otherwise stated. In countries having changed boundaries the pre-war figures are estimates for one year only of numbers within present boundaries. For the pre-war average the years immediately preceding the war have been used.

[8] Countries reporting as of December have been considered as of Jan. 1 of the following year, i. e., figures for number of cattle in France as of Dec. 31, 1920, have been put in the 1921 column.

[10] These totals include interpolations for a few countries not reporting each year and rough estimates for some others

[13] Buffaloes included.

[14] Year 1916.

TABLE 352.—*Cattle and calves: Receipts at principal markets and at all markets, 1909–1926*

[Thousands—i. e., 000 omitted]

Year	Chicago	Denver	East St. Louis	Fort Worth	Kansas City	Omaha	South St. Joseph	South St. Paul	Sioux City	Total	All other markets reporting [1]	Total all markets reporting (1)
1909	3,340	426	1,241	1,197	2,660	1,125	592	497	426	11,504		
1910	3,553	399	1,208	1,071	2,507	1,224	565	604	439	11,570		
1911	3,453	298	1,072	884	2,370	1,174	513	539	487	10,790		
1912	3,158	416	1,200	1,039	2,147	1,017	494	524	431	10,426		
1913	2,888	499	1,100	1,185	2,319	962	450	532	394	10,329		
1914	2,601	443	1,041	1,176	1,957	939	356	585	368	9,466		
1915	2,685	424	992	944	1,963	1,218	441	856	534	10,057	4,496	14,553
1916	3,250	601	1,200	1,081	2,331	1,434	480	941	602	11,920	5,756	17,676
1917	3,820	653	1,405	1,960	2,902	1,720	670	1,197	707	15,034	8,032	23,066
1918	4,448	728	1,509	1,665	3,320	1,993	870	1,430	818	16,781	8,514	25,295
1919	4,253	824	1,473	1,267	3,085	1,975	750	1,491	814	15,932	8,691	24,623
1920	3,849	617	1,254	1,134	2,500	1,603	643	1,373	752	13,725	8,472	22,197
1921	3,540	482	1,077	984	2,469	1,435	558	985	620	12,150	7,637	19,787
1922	3,934	656	1,400	1,084	2,983	1,744	655	1,387	747	14,590	8,627	23,217
1923	3,918	620	1,399	1,258	3,208	1,793	709	1,349	759	15,013	8,198	23,211
1924	3,997	630	1,385	1,392	3,043	1,863	720	1,323	836	15,189	8,506	23,695
1925	3,871	587	1,444	1,370	2,958	1,709	734	1,636	897	15,206	8,861	24,067
1926	4,012	529	1,526	1,185	2,617	1,815	679	1,910	969	15,242	8,630	23,872

Division of Statistical and Historical Research. Prior to 1915 figures compiled from yearbooks of stockyard companies; subsequent figures compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Receipts 1900–1908 are available in 1924 Yearbook, p. 840, Table 435.

[1] Totals for all markets not available prior to 1915

TABLE 353.—*Cattle and calves: Receipts at all public stockyards, 1915–1926*

[Thousands—i. e., 000 omitted]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1915[1]	1,029	768	1,017	987	1,111	1,113	1,039	1,246	1,531	1,818	1,724	1,170	14,553
1916[1]	1,202	1,055	1,201	1,151	1,385	1,319	1,154	1,584	1,779	2,409	1,977	1,460	17,676
1917	1,696	1,302	1,330	1,539	1,961	1,759	1,729	1,814	2,357	3,054	2,626	1,899	23,066
1918	1,727	1,498	1,713	2,046	1,863	1,815	2,128	2,024	2,826	2,865	2,648	2,142	25,295
1919	2,119	1,453	1,517	1,767	1,836	1,588	2,016	2,039	2,396	3,008	2,702	2,182	24,623
1920	1,881	1,480	1,663	1,557	1,778	1,879	1,671	1,962	2,294	2,209	2,428	1,395	22,197
1921	1,644	1,190	1,566	1,494	1,542	1,580	1,348	1,867	1,906	2,310	1,928	1,417	19,787
1922	1,628	1,417	1,622	1,470	1,878	1,759	1,709	2,149	2,397	2,936	2,427	1,825	23,217
1923	1,877	1,427	1,502	1,670	1,900	1,629	1,903	2,214	2,295	2,802	2,182	1,810	23,211
1924	1,888	1,457	1,556	1,751	1,890	1,673	1,798	1,934	2,566	2,736	2,363	2,083	23,695
1925	1,869	1,530	1,860	1,826	1,737	1,746	1,970	2,245	2,157	2,789	2,282	2,056	24,067
1926	1,840	1,551	1,811	1,711	1,894	1,871	1,820	1,997	2,397	2,674	2,460	1,846	23,872

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

[1] Complete information for 1915 and 1916, particularly on disposition of stock, is not obtainable from many of the markets.

TABLE 354.—*Cattle and calves: Receipts, local slaughter, and stocker and feeder shipments from public stockyards, 1923–1926*

[In thousands—i. e., 000 omitted]

Market	Receipts				Local slaughter				Stocker and feeder shipments			
	1923	1924	1925	1926	1923	1924	1925	1926	1923	1924	1925	1926
Albany, N. Y	14	13	10	11	1	1	1	1	(1)	(1)	(1)	(1)
Amarillo, Tex	115	130	163	120	(1)	0	(1)	1	74	87	132	87
Atlanta, Ga	59	50	55	56	33	29	29	29	6	2	1	0
Augusta, Ga	12	9	9	9	9	7	8	5	2	2	2	1
Baltimore, Md	228	233	247	247	158	165	168	172	3	5	7	7
Boston, Mass	67	101	127	108	0	0	0	0	0	0	0	0
Buffalo, N. Y	589	550	599	594	189	199	212	215	4	12	13	8
Chattanooga, Tenn	17	15	15	14	13	11	13	13	3	4	2	1
Cheyenne, Wyo	22	15	10	9	0	0	0	0	0	0	0	0
Chicago, Ill	3,918	3,997	3,871	4,012	2,813	2,890	2,869	2,951	295	258	231	240
Cincinnati, Ohio	426	442	432	413	230	242	246	248	23	21	21	19
Cleveland, Ohio	278	285	293	260	256	256	264	241	4	5	2	1
Dallas, Tex	7	7	12	12	7	7	12	12	0	0	0	0
Dayton, Ohio	34	34	34	34	30	30	30	31	0	0	0	0
Denver, Colo	620	630	587	529	131	159	175	159	361	359	289	303
Detroit, Mich	268	283	303	306	239	248	262	263	11	10	6	5
East St. Louis, Ill	1,399	1,385	1,444	1,526	544	544	550	533	281	199	143	112
El Paso, Tex	103	142	177	166	26	30	31	28	40	59	85	113
Evansville, Ind	39	36	42	52	22	21	17	20	3	3	4	5
Fort Wayne, Ind	8	14	18	19	4	4	4	7	(1)	(1)	(1)	(1)
Fort Worth, Tex	1,258	1,392	1,370	1,185	795	972	987	761	169	158	191	222
Fostoria, Ohio	12	11	12	9	1	1	1	2	5	4	2	1
Indianapolis, Ind	528	560	547	541	247	269	246	295	44	48	45	39
Jacksonville, Fla	7	5	7	9	4	4	5	8	(1)	0	(1)	(1)
Jersey City, N. J	673	711	745	708	673	711	745	708	0	0	0	0
Kansas City, Mo	3,206	3,043	2,958	2,617	1,559	1,552	1,631	1,459	1,162	998	908	761
Knoxville, Tenn	22	25	27	20	12	13	15	17	4	2	4	8
Lafayette, Ind	13	14	16	17	8	8	8	9	1	(1)	(1)	1
Lancaster, Pa	229	223	233	236	47	45	53	55	53	63	82	74
Laredo, Tex	15	12	16	14	2	3	3	5	10	6	10	8
Los Angeles, Calif	183	252	247	268	173	242	235	256	9	9	11	11
Louisville, Ky	255	231	240	215	98	93	103	102	32	22	24	18
Marion, Ohio	9	6	5	5	2	2	2	1	(1)	(1)	(1)	(1)
Memphis, Tenn	22	19	24	48	11	11	17	26	7	5	4	11
Milwaukee, Wis	512	532	588	640	471	494	547	587	16	14	11	10

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Local slaughter represents number driven out from public stockyards for local slaughter.

[1] Not over 500.

TABLE 354.—*Cattle and calves: Receipts, local slaughter, and stocker and feeder shipments from public stockyards, 1923–1926*—Continued

[In thousands—i. e., 000 omitted]

Market	Receipts				Local slaughter				Stocker and feeder shipments			
	1923	1924	1925	1926	1923	1924	1925	1926	1923	1924	1925	1926
Montgomery, Ala	75	77	73	94	7	10	6	8	7	10	6	9
Moultrie, Ga	5	7	6	8	2	4	4	5	(1)	(1)	1	1
Muncie, Ind	0	0	15	18	0	0	5	5	0	0	1	1
Nashville, Tenn	96	100	116	109	51	51	56	57	9	10	11	9
Newark, N. J	41	46	41	42	37	43	37	38	3	3	4	3
New Orleans, La	207	212	205	202	168	178	173	166	21	11	10	12
New York, N. Y	216	218	222	227	215	217	222	220	0	0	0	0
North Salt Lake, Utah	74	99	100	90	16	36	40	39	11	9	12	4
Ogden, Utah	122	155	163	164	16	14	10	13	45	59	64	64
Oklahoma City, Okla	414	388	404	340	279	290	306	249	70	46	58	48
Omaha, Nebr	1,793	1,863	1,709	1,815	997	1,104	1,080	1,165	586	467	383	392
Pasco, Wash	2	5	7	4	0	(1)	0	0	0	0	(1)	0
Peoria, Ill	38	46	56	70	17	18	17	19	4	7	6	6
Philadelphia, Pa	179	192	188	183	172	189	185	180	0	0	0	0
Pittsburgh, Pa	821	909	887	918	175	172	179	175	0	0	0	0
Portland, Oreg	168	175	176	164	98	106	112	102	10	10	10	7
Pueblo, Colo	151	108	112	96	1	1	1	2	45	41	45	37
Richmond, Va	32	33	39	37	24	25	27	25	3	2	1	1
South St. Joseph, Mo	709	720	734	679	444	469	529	494	170	142	118	103
South St. Paul, Minn	1,349	1,323	1,636	1,910	851	928	1,152	1,294	348	272	322	418
San Antonio, Tex	163	183	167	145	53	60	57	66	66	63	53	23
Seattle, Wash	55	64	57	64	55	62	56	63	(1)	0	(1)	0
Sioux City, Iowa	759	836	897	969	341	402	485	522	308	264	260	317
Sioux Falls, S. Dak	30	14	24	36	11	5	10	13	14	7	12	20
Spokane, Wash	45	55	60	55	28	28	35	32	8	13	12	10
Springfield, Ohio	7	9	13	14	2	3	2	2	0	0	2	2
Toledo, Ohio	25	25	24	28	13	13	11	17	4	4	3	7
Washington, D. C	32	33	36	32	31	32	37	32	0	0	0	0
Wichita, Kans	417	389	417	330	104	125	139	121	198	183	199	162
Discontinued [2]	17	4	(1)	0	14	2	(1)	0	1	(1)	0	0
Total	23,211	23,695	24,067	23,872	13,030	13,850	14,462	14,350	4,553	3,978	3,823	3,712

[1] Not over 500.
[2] Includes only those markets which have been totally discontinued.

TABLE 355.—*Cattle and calves: Stocker and feeder shipments from public stockyards, 1916–1926*

[Thousands—i. e., 000 omitted]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1916 [1]	221	197	250	262	289	264	171	330	464	682	461	256	3,847
1917	260	213	249	306	401	353	262	330	588	768	729	344	4,803
1918	222	214	319	385	491	393	274	418	604	704	623	366	5,013
1919	364	264	277	391	442	272	236	397	611	839	723	470	5,286
1920	349	240	241	244	323	272	218	314	488	580	553	280	4,102
1921	205	166	236	238	214	209	122	355	395	622	497	245	3,504
1922	233	243	282	235	359	259	223	469	630	864	710	357	4,864
1923	281	210	199	233	300	234	223	480	631	785	624	353	4,553
1924	243	170	174	239	275	201	169	306	580	768	549	309	3,978
1925	207	176	230	271	216	154	243	360	427	717	489	333	3,823
1926	225	177	184	202	218	169	198	252	522	694	570	301	3,712

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

[1] Complete information for 1916 not obtainable from many markets.

Table 356.—*Cattle and calves: Receipts, local slaughter, and stocker and feeder shipments at certain public stockyards, 1926*

[In thousands—i. e., 000 omitted]

Stockyard	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Chicago, Ill.:													
Receipts	321	281	342	307	317	330	298	322	375	393	399	327	4,012
Local slaughter	238	206	267	225	244	256	233	237	267	266	285	227	2,951
Stocker and feeder shipments	15	16	12	11	10	9	11	13	42	46	36	19	240
Denver, Colo.:													
Receipts	42	21	34	28	50	27	18	25	44	83	110	47	529
Local slaughter	14	10	14	14	13	14	10	13	15	15	16	11	159
Stocker and feeder shipments	26	7	12	11	30	13	5	9	20	59	81	30	303
East St. Louis, Ill.:													
Receipts	105	88	95	86	110	139	139	160	185	163	151	105	1,526
Local slaughter	42	36	40	31	39	47	42	52	54	54	60	36	533
Stocker and feeder shipments	7	6	5	4	5	8	10	7	19	17	15	9	112
Fort Worth, Tex.:													
Receipts	105	70	67	96	120	107	97	80	101	117	129	96	1,185
Local slaughter	73	49	49	54	62	66	70	56	65	76	79	62	761
Stocker and feeder shipments	16	16	12	31	27	10	11	11	13	28	26	21	222
Kansas City, Mo.:													
Receipts	176	150	166	141	159	171	195	295	342	350	298	179	2,617
Local slaughter	106	96	111	91	103	112	120	140	157	154	151	118	1,459
Stocker and feeder shipments	44	37	37	39	32	31	39	69	136	140	109	48	761
Omaha, Nebr.:													
Receipts	130	114	150	123	134	160	136	157	217	219	154	121	1,815
Local slaughter	89	80	106	85	94	112	99	101	117	106	89	87	1,165
Stocker and feeder shipments	24	17	19	12	9	9	15	31	79	99	50	28	392
Sioux City, Iowa:													
Receipts	81	63	75	60	60	75	81	76	110	132	83	73	969
Local slaughter	47	38	41	44	38	43	48	40	45	57	37	44	522
Stocker and feeder shipments	18	17	18	10	12	18	22	23	50	70	37	22	317
South St. Joseph, Mo.:													
Receipts	56	48	56	42	51	50	52	62	75	72	65	50	679
Local slaughter	41	37	40	35	39	38	41	44	51	46	44	38	494
Stocker and feeder shipments	8	6	5	4	3	3	6	7	18	21	14	8	103
South St. Paul, Minn.:													
Receipts	122	117	148	128	139	144	164	147	194	250	220	137	1,910
Local slaughter	94	93	116	103	110	112	104	81	104	131	137	109	1,294
Stocker and feeder shipments	19	16	22	17	17	24	43	43	67	74	53	23	418

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Local slaughter represents number driven out from public stockyards for local slaughter.

TABLE 357.—*Feeding cattle: Inspected shipments from public stockyards, 1926*

Origin and destination	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Number	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*
Market origin:													
Chicago, Ill	14,329	12,711	12,196	12,314	9,861	8,268	11,834	19,858	38,202	47,834	38,748	18,969	245,124
Denver, Colo	22,948	7,041	13,347	10,523	31,129	11,470	5,404	5,367	20,387	53,218	79,879	27,335	288,048
East St. Louis, Ill	6,173	15,554	4,652	3,809	3,238	5,440	7,388	6,342	16,911	15,856	15,724	9,279	110,366
Fort Worth, Tex	16,275	14,981	13,228	29,803	23,773	10,234	9,251	11,206	21,594	23,876	33,853	24,693	232,767
Indianapolis, Ind	2,176	2,929	3,736	2,178	3,404	4,385	3,613	3,928	5,473	5,443	3,274	3,391	43,930
Kansas City, Kans	40,569	33,660	33,531	35,202	27,872	26,626	30,854	64,184	130,874	131,489	104,022	47,092	705,975
Louisville, Ky	1,138	909	975	691	771	1,000	787	1,236	2,872	4,089	2,833	1,405	18,706
Oklahoma City, Okla	4,502	5,622	5,273	4,617	2,129	2,016	2,564	3,773	7,513	12,054	11,974	7,374	69,411
Omaha, Nebr	24,060	18,213	19,889	11,559	8,919	9,923	13,278	29,569	74,795	95,136	46,120	27,191	378,652
Sioux City, Iowa	16,024	16,084	17,526	9,011	11,321	14,598	20,756	22,405	49,386	66,311	36,038	20,808	300,268
South St. Joseph, Mo	4,159	3,486	3,501	2,614	1,445	1,742	3,256	4,104	10,266	10,387	6,615	4,255	55,830
South St. Paul, Minn	11,980	12,900	17,482	12,505	11,489	17,755	25,905	31,761	49,135	46,775	37,031	15,882	290,600
Wichita, Kans	15,715	11,166	15,505	21,767	10,132	2,923	4,627	6,354	12,621	22,820	15,050	13,420	152,100
All other inspected	8,111	6,500	7,066	10,723	9,267	10,511	14,367	18,505	24,981	35,616	30,583	19,298	195,528
Total	188,159	161,756	167,907	167,316	154,750	126,891	153,884	228,592	465,010	570,904	461,744	240,392	3,087,305
State destination:													
Colorado	8,437	3,952	6,363	4,413	9,726	5,820	5,147	4,043	11,737	34,086	56,023	18,794	168,541
Illinois	22,654	28,152	15,577	12,705	10,191	19,392	28,509	53,580	91,163	74,437	54,503	24,266	435,129
Indiana	9,383	6,355	9,176	7,018	6,369	9,748	10,390	13,951	27,505	31,833	24,493	11,269	167,490
Iowa	32,199	31,702	30,323	18,067	18,668	21,615	33,722	52,715	109,099	128,027	65,814	35,475	577,426
Kansas	31,224	23,209	31,898	44,548	25,496	10,833	12,150	15,640	36,040	54,449	55,866	36,298	377,651
Kentucky	2,188	1,322	1,491	818	1,810	2,301	2,426	3,506	8,152	8,553	6,675	4,158	43,400
Michigan	756	759	2,174	1,763	2,164	3,227	4,935	3,182	6,456	6,436	7,103	2,488	41,443
Minnesota	987	1,718	2,585	1,822	1,915	1,485	1,633	2,62[illegible]	3,524	7,884	4,482	980	31,639
Missouri	17,651	13,807	11,007	12,198	8,283	5,792	9,188	16,800	48,074	56,198	39,525	16,198	254,721
Nebraska	29,585	18,142	25,848	17,809	28,693	12,825	15,403	18,496	50,436	73,940	53,302	30,017	374,496
Ohio	4,309	4,338	3,710	2,630	3,942	6,194	7,430	10,530	20,195	16,998	15,447	6,058	101,781
Oklahoma	13,455	12,001	11,418	22,047	13,098	4,348	5,788	7,713	13,620	19,845	23,498	11,857	158,688
Pennsylvania	1,045	316	521	959	832	1,616	1,605	3,908	4,518	6,821	4,783	2,595	29,519
South Dakota	520	1,928	1,654	1,048	3,947	3,210	1,177	1,969	4,767	7,507	2,766	1,951	32,444
Texas	8,574	8,548	7,877	10,012	8,519	4,569	5,976	10,770	18,403	19,796	24,607	23,653	151,304
Wisconsin	909	1,289	2,286	3,287	3,998	3,848	2,806	1,590	1,587	2,458	3,701	1,295	29,054
All other	4,283	4,218	3,999	6,172	7,090	10,068	5,599	7,575	9,734	21,636	19,156	13,040	112,579
Total	188,159	161,756	167,907	167,316	154,750	126,891	153,884	228,592	465,010	570,904	461,744	240,392	3,087,305

Division of Statistical and Historical Reserach. Compiled from Bureau of Animal Industry inspection records.

TABLE 358.—*Farm value of cattle other than milk cows, by age groups, United States, January 1, 1910–1927*

Jan. 1	Under 1 year old	1 and under 2 years	2 years and over	Jan. 1	Under 1 year old	1 and under 2 years	2 years and over
	Dollars	*Dollars*	*Dollars*		*Dollars*	*Dollars*	*Dollars*
1910	10.92	17.89	25.96	1919	24.97	41.74	60.41
1911	11.72	19.37	27.90	1920	24.48	41.00	59.08
1912	12.14	20.09	29.12	1921	17.44	29.05	43.50
1913	14.90	25.11	36.38	1922	13.41	22.29	32.31
1914	17.84	29.77	42.77	1923	14.69	24.13	34.14
1915	19.06	31.21	45.92	1924	14.38	24.10	33.34
1916	19.08	31.48	45.81	1925	14.17	23.39	32.55
1917	20.71	33.93	48.63	1926	16.85	26.99	36.50
1918	23.44	38.63	55.62	1927	18.24	29.41	39.95

Division of Crop and Livestock Estimates.

TABLE 359.—*Milk cows: Estimated price[1] per head received by producers, 15th of month, United States, 1910–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1910–1913	44.57	44.91	46.32	46.88	46.84	47.09	46.38	46.48	46.87	47.42	47.78	47.98	47.99
1914–1920	70.75	71.54	72.71	74.12	74.86	75.15	75.08	74.60	74.48	74.43	72.73	72.30	73.56
1921–1925	56.81	56.28	57.52	57.54	57.51	57.07	56.08	55.59	55.49	55.25	55.21	56.11	56.29
1910	41.18	40.35	41.75	42.22	42.38	43.46	42.86	42.77	42.68	43.20	43.34	43.41	42.47
1911	44.70	44.48	45.42	44.81	44.54	43.86	42.44	42.26	42.22	42.69	42.70	42.72	43.57
1912	42.89	43.40	44.09	45.14	45.63	45.84	45.41	46.11	46.79	47.30	47.38	48.62	45.72
1913	49.51	51.42	54.02	55.34	54.80	55.20	54.80	54.78	55.78	56.47	57.71	57.19	54.75
1914	57.99	59.09	59.23	59.60	59.85	59.82	59.67	60.72	59.58	59.53	58.77	58.23	59.34
1915	58.47	57.99	58.00	57.78	58.29	58.59	60.31	58.34	58.38	58.76	57.35	56.79	58.25
1916	57.79	57.99	59.51	60.68	60.98	61.63	62.04	61.32	61.41	62.19	62.67	63.18	60.95
1917	63.92	65.93	68.46	72.09	72.78	72.87	72.81	72.53	73.93	75.79	75.00	76.16	71.86
1918	76.54	78.36	80.71	82.45	84.11	84.74	84.97	84.06	85.21	85.41	84.51	85.78	83.07
1919	86.10	86.15	88.15	90.91	93.43	93.84	94.51	94.72	93.42	93.43	93.27	95.54	91.96
1920	94.42	95.27	94.94	95.36	94.56	94.56	91.23	90.50	89.40	85.90	77.56	70.42	89.51
1921	66.82	63.44	65.37	64.35	62.63	59.89	56.55	55.85	54.33	53.39	53.28	53.30	59.10
1922	52.83	53.54	54.87	54.46	54.76	54.87	54.20	52.67	52.79	52.86	51.62	53.21	53.56
1923	54.01	54.15	55.29	56.14	55.91	56.34	56.22	55.45	56.13	55.51	55.39	54.66	55.43
1924	55.57	55.49	55.88	55.92	56.37	56.45	55.46	55.74	55.54	54.30	55.05	54.00	55.48
1925	54.81	54.79	56.19	56.85	57.88	57.79	57.95	58.26	58.68	60.17	60.69	60.38	57.87
1926	62.06	63.41	63.17	65.65	66.63	66.74	66.68	65.37	66.12	66.26	67.26	66.74	65.51

Division of Crop and Livestock Estimates.

[1] As reported by country dealers.

TABLE 360.—*Cattle, beef: Estimated price per 100 pounds, received by producers in the United States, 1910–1926*

Year beginning August	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Weighted average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1910–1913	5.08	5.09	5.09	5.01	5.03	5.12	5.22	5.39	5.55	5.57	5.50	5.45	5.24
1914–1920	7.92	7.76	7.53	7.35	7.26	7.43	7.55	7.83	8.14	8.25	8.19	7.93	7.74
1921–1925	5.75	5.58	5.52	5.36	5.34	5.52	5.64	5.91	6.07	6.09	6.09	6.03	5.72
1910	4.64	4.65	4.64	4.48	4.45	4.58	4.57	4.66	4.67	4.59	4.43	4.28	4.55
1911	4.39	4.43	4.32	4.36	4.37	4.46	4.61	4.75	5.15	5.36	5.23	5.17	4.69
1912	5.37	5.35	5.36	5.22	5.33	5.40	5.55	5.88	6.08	6.01	6.02	5.98	5.60
1913	5.91	5.92	6.05	5.99	5.96	6.04	6.16	6.28	6.29	6.33	6.32	6.38	6.12
1914	6.47	6.38	6.23	6.02	6.01	5.99	5.93	5.92	5.96	6.13	6.20	6.07	6.12
1915	6.18	6.06	6.04	5.85	5.75	5.85	5.99	6.37	6.66	6.73	6.91	6.78	6.24
1916	6.51	6.55	6.37	6.44	6.56	6.86	7.36	7.91	8.57	8.70	8.65	8.30	7.31
1917	8.17	8.40	8.35	8.21	8.24	8.33	8.55	8.85	9.73	10.38	10.40	10.07	8.92
1918	9.71	9.63	9.33	9.14	9.28	9.65	10.02	10.34	10.81	10.84	10.20	9.96	9.85
1919	9.82	9.02	8.65	8.65	8.63	8.99	8.98	9.08	9.20	8.97	9.32	8.93	9.00
1920	8.56	8.29	7.77	7.15	6.36	6.32	6.02	6.36	6.08	5.98	5.65	5.40	6.76
1921	5.39	4.98	4.81	4.69	4.62	4.75	5.07	5.46	5.53	5.70	5.84	5.76	5.18
1922	5.51	5.44	5.48	5.29	5.28	5.51	5.55	5.62	5.78	5.77	5.82	5.72	5.56
1923	5.60	5.70	5.48	5.23	5.26	5.38	5.47	5.63	5.82	5.94	5.79	5.65	5.57
1924	5.67	5.53	5.52	5.43	5.35	5.63	5.69	6.18	6.55	6.48	6.46	6.55	5.88
1925	6.58	6.27	6.29	6.14	6.18	6.31	6.42	6.65	6.66	6.57	6.56	6.46	6.40
1926	6.29	6.48	6.43	6.32	6.42	------	------	------	------	------	------	------	------

Division of Crop and Livestock Estimates.

TABLE 361.—*Calves, veal: Estimated price per 100 pounds, received by producers in the United States, 1910–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Weighted average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1910–1913	6.51	6.49	6.67	6.52	6.34	6.54	6.48	6.59	6.78	6.80	6.74	6.74	6.60
1914–1920	9.83	9.96	10.06	10.10	9.85	10.02	10.30	10.32	10.51	10.35	10.01	9.89	10.11
1921–1925	8.30	8.53	8.55	7.98	7.80	7.77	7.88	7.94	8.26	8.38	8.00	7.94	8.09
1910	6.41	6.28	6.59	6.54	6.30	6.57	6.37	6.29	6.43	6.41	6.39	6.38	6.42
1911	6.50	6.38	6.48	5.96	5.68	5.72	5.74	5.93	6.11	6.15	6.10	5.98	6.04
1912	6.06	6.07	6.11	6.22	6.23	6.33	6.33	6.62	6.83	6.90	6.77	6.88	6.45
1913	7.06	7.23	7.49	7.38	7.17	7.53	7.46	7.53	7.73	7.72	7.70	7.74	7.48
1914	7.89	7.90	7.92	7.68	7.59	7.69	7.80	8.08	8.06	7.97	7.78	7.61	7.83
1915	7.66	7.62	7.50	7.31	7.35	7.53	7.87	7.75	7.80	7.91	7.69	7.61	7.63
1916	7.67	7.87	8.11	8.00	8.08	8.39	8.54	8.59	8.77	8.59	8.60	8.79	8.35
1917	9.15	9.88	9.94	10.49	10.48	10.60	10.77	10.56	11.08	11.10	10.66	10.98	10.51
1918	11.16	11.17	11.33	11.71	11.62	11.88	12.33	12.22	12.57	12.35	11.94	12.31	11.91
1919	12.39	12.18	12.65	12.78	12.11	12.40	13.38	13.43	13.39	12.87	12.65	12.67	12.76
1920	12.89	13.12	12.98	12.72	11.69	11.68	11.44	11.64	11.88	11.64	10.77	9.27	11.80
1921	9.34	9.08	9.05	7.73	7.55	7.43	7.37	7.31	7.67	7.61	7.20	7.14	7.81
1922	7.23	7.84	7.85	7.26	7.28	7.67	7.49	7.67	[illegible]	8.17	7.92	7.78	7.68
1923	8.05	8.37	8.20	7.78	7.69	7.66	8.00	8.00	8.34	8.37	7.85	7.75	7.99
1924	8.36	8.51	8.43	8.33	8.14	7.91	7.88	7.94	8.09	8.22	7.89	7.84	8.12
1925	8.50	8.87	9.21	8.80	8.35	8.18	8.65	8.80	9.07	9.52	9.16	9.17	8.85
1926	9.44	9.86	9.75	9.45	8.92	9.65	9.47	9.54	10.06	10.29	9.54	9.44	9.61

Division of Crop and Livestock Estimates.

TABLE 362.—*Cattle, beef: Estimated price per 100 pounds, received by producers, by States, 1926*

State	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Maine	7.10	7.50	6.90	7.00	7.60	6.90	7.80	7.30	7.90	7.30	7.60	7.50	7.37
New Hampshire	6.80	7.40	7.10	6.00	6.10	6.60	7.00	6.30	6.40	6.60	6.40	6.30	6.58
Vermont	5.00	5.10	5.70	5.60	5.40	5.20	5.80	5.10	5.90	5.10	5.40	4.90	5.35
Massachusetts	5.40	5.50	5.80	5.60	6.00	6.00	6.30	5.50	6.40	6.30	5.70	5.60	5.84
Rhode Island	5.00	6.50	6.00	6.00	6.50	6.00	5.50	4.80	5.00	5.30	4.50	6.00	5.59
Connecticut	7.30	8.50	7.20	8.00	8.60	7.50	7.50	8.20	7.60	7.70	7.80	8.00	7.82
New York	5.90	6.40	6.20	6.50	5.80	6.20	5.60	5.70	5.70	5.70	5.80	5.00	5.92
New Jersey	6.00	7.30	8.00	7.00	6.00	7.00	6.00	6.30	------	5.00	5.00	6.00	6.33
Pennsylvania	7.90	7.70	7.90	8.00	7.60	7.90	7.30	7.60	7.50	7.40	7.60	7.70	7.68
Ohio	7.40	7.30	7.40	7.50	7.40	7.50	7.30	7.30	7.10	7.30	7.10	7.20	7.32
Indiana	7.40	7.20	7.40	7.30	7.50	7.30	7.30	7.10	7.40	7.20	7.10	7.10	7.28
Illinois	7.40	7.20	7.50	7.30	7.60	7.90	7.50	7.30	7.20	7.50	7.40	7.70	7.46
Michigan	6.70	6.70	6.40	7.10	6.90	6.90	7.10	6.60	6.60	6.50	6.50	6.50	6.71
Wisconsin	5.40	5.50	5.60	6.00	6.10	6.20	5.60	5.70	5.90	5.60	5.60	5.60	5.73
Minnesota	6.10	6.40	6.40	6.60	6.70	6.60	6.60	6.20	6.50	6.10	5.70	6.00	6.32
Iowa	8.00	8.00	8.10	8.10	7.70	8.00	7.90	7.90	8.20	8.40	7.80	7.90	8.00
Missouri	6.90	7.30	7.60	7.40	7.40	7.40	7.30	7.00	7.20	7.40	7.30	7.30	7.29
North Dakota	5.60	5.70	5.90	5.90	6.10	6.00	5.80	5.60	5.40	5.40	5.30	5.30	5.67
South Dakota	7.10	6.70	7.20	7.10	7.00	7.30	6.80	6.60	6.70	6.90	6.90	6.70	6.92
Nebraska	8.10	7.80	8.10	8.10	7.90	8.00	7.90	7.70	8.30	8.00	7.90	7.70	7.96
Kansas	7.30	7.50	7.60	7.60	7.40	7.40	7.50	7.00	7.20	7.20	7.20	7.00	7.32
Delaware	------	8.00	7.70	8.00	8.50	8.00	7.50	7.50	7.50	8.00	7.50	7.00	7.75
Maryland	7.60	7.90	7.60	8.00	7.90	8.00	8.20	7.90	7.50	7.70	7.70	7.70	7.81
Virginia	6.10	6.30	6.40	6.50	6.60	6.30	6.50	6.30	6.20	6.20	5.90	6.10	6.28
West Virginia	7.10	6.70	7.00	6.80	6.70	7.10	6.80	6.80	6.50	6.60	6.40	6.50	6.75
North Carolina	4.90	5.10	5.60	5.30	6.00	5.70	6.30	6.00	6.00	5.90	5.90	5.50	5.68
South Carolina	4.30	4.50	4.60	4.50	4.60	4.70	4.60	4.40	4.40	4.50	4.60	4.50	4.52
Georgia	3.70	4.20	4.10	4.80	4.60	4.50	4.60	4.10	4.30	4.40	4.10	4.00	4.28
Florida	4.30	5.30	4.90	4.90	4.60	5.00	4.20	4.00	4.50	4.30	4.50	4.40	4.58
Kentucky	6.10	6.50	6.50	6.50	6.60	6.50	6.40	6.60	6.40	6.30	6.30	6.40	6.42
Tennessee	5.00	5.10	5.50	5.30	5.60	5.60	5.40	5.70	5.40	5.40	5.40	5.50	5.41
Alabama	3.60	8.70	4.20	4.20	4.10	4.10	3.90	4.00	4.20	3.90	4.00	4.00	3.99
Mississippi	3.50	3.50	3.50	3.90	3.90	4.10	3.90	4.00	3.90	4.20	3.70	3.80	3.82
Arkansas	4.10	4.00	4.00	4.30	4.60	4.50	4.20	4.30	4.20	4.20	4.10	4.10	4.22
Louisiana	4.60	4.40	4.50	4.60	4.50	5.10	4.40	4.10	4.70	5.00	5.00	4.80	4.64
Oklahoma	5.10	5.70	5.60	5.20	5.40	5.70	5.50	5.80	5.50	5.40	5.60	5.60	5.51
Texas	4.80	4.80	5.60	5.40	5.40	5.20	5.30	5.00	5.30	5.40	5.20	5.50	5.24
Montana	6.20	6.30	6.50	6.80	6.70	6.30	6.70	5.60	6.00	6.20	6.10	6.00	6.28
Idaho	5.90	6.20	6.20	6.30	6.20	6.10	5.90	5.90	5.90	6.10	5.70	6.00	6.03
Wyoming	6.60	6.30	6.60	6.00	6.90	6.40	6.80	6.00	6.90	6.40	6.30	6.60	6.48
Colorado	6.50	7.10	7.30	7.70	7.00	7.40	7.10	7.10	6.80	6.50	6.60	6.50	6.97
New Mexico	5.60	5.50	6.00	6.20	6.00	6.00	5.00	5.70	6.80	5.00	5.30	6.30	5.78

Division of Crop and Livestock Estimates.

Table 362.—*Cattle, beef: Estimated prices per 100 pounds, received by producers, by States, 1926*—Continued

State	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Arizona	5.70	6.40	6.70	6.80	6.20	6.10	6.70	6.10	6.10	6.00	5.90	6.50	6.27
Utah	6.10	6.40	6.40	6.80	7.10	6.40	6.20	5.80	5.70	6.00	6.10	6.30	6.32
Nevada	------	7.00	7.50	7.00	6.50	6.30	6.50	7.00	6.70	6.00	6.60	6.80	6.72
Washington	6.00	6.70	6.60	6.60	6.00	6.10	5.90	6.00	5.40	5.70	6.20	6.00	6.10
Oregon	6.70	7.60	6.90	7.10	7.00	6.20	6.60	6.50	6.80	6.70	6.70	6.60	6.78
California	7.40	7.30	7.30	7.30	7.20	6.50	6.50	6.60	6.70	6.90	6.70	7.00	6.95
United States	6.31	6.42	6.65	6.66	6.57	6.56	6.46	6.29	6.48	6.43	6.32	6.42	6.46

Table 363.—*Calves, veal: Estimated price per 100 pounds, received by producers, by States, 1926*

State	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Maine	10.60	11.80	10.70	10.80	10.10	10.40	10.30	10.20	11.20	11.00	11.00	10.30	10.70
New Hampshire	11.10	11.50	11.60	10.80	10.60	11.40	11.60	11.20	11.80	11.60	10.90	11.10	11.27
Vermont	10.70	11.50	10.30	10.50	9.80	10.40	10.90	10.30	10.70	10.40	11.00	10.40	10.58
Massachusetts	10.50	12.00	11.70	11.10	11.50	12.30	11.80	12.50	12.60	11.80	12.20	11.20	11.77
Rhode Island	------	12.50	12.20	------	12.20	13.00	14.00	13.00	12.50	13.60	12.60	13.50	12.91
Connecticut	13.10	13.00	12.50	13.00	13.10	13.10	13.10	13.00	13.20	13.40	13.10	13.30	13.08
New York	12.10	12.20	12.00	11.80	10.80	11.50	11.50	11.80	12.20	12.70	12.30	12.00	11.91
New Jersey	13.70	14.20	13.60	13.00	13.90	14.10	13.60	14.20	13.50	13.50	14.00	14.50	13.82
Pennsylvania	12.20	13.00	12.30	13.00	10.90	11.60	11.60	11.80	12.60	12.40	12.40	12.30	12.18
Ohio	11.90	12.10	12.00	11.30	10.70	11.20	11.20	11.30	12.10	12.50	11.80	11.50	11.63
Indiana	11.00	11.70	11.60	10.80	10.20	11.10	10.70	11.30	11.70	12.40	11.10	11.00	11.22
Illinois	11.00	11.30	12.80	10.10	9.90	11.20	10.80	10.50	11.60	11.80	10.60	10.70	10.86
Michigan	12.50	12.60	11.80	11.50	11.00	11.60	11.90	11.80	12.70	13.00	11.70	12.10	12.02
Wisconsin	10.20	10.30	10.30	9.10	8.30	10.40	10.00	10.60	11.30	11.80	9.90	9.50	10.14
Minnesota	9.40	9.60	10.20	9.20	8.70	9.90	9.60	9.40	10.30	10.30	9.10	8.70	9.53
Iowa	9.50	10.00	10.20	9.10	8.90	10.00	9.90	10.10	10.30	10.90	9.60	9.60	9.84
Missouri	9.30	9.60	9.60	9.00	9.00	9.50	9.10	9.00	10.00	10.70	10.00	9.60	9.53
North Dakota	8.30	8.50	8.60	8.20	8.30	8.60	8.50	8.50	8.60	8.90	7.80	7.80	8.38
South Dakota	8.80	8.70	9.00	8.80	8.30	9.00	8.70	8.20	8.90	8.80	8.20	8.10	8.62
Nebraska	8.30	8.70	9.20	9.00	8.60	9.30	9.00	8.70	9.30	9.00	9.00	9.40	8.96
Kansas	8.70	9.30	9.10	8.60	8.50	9.00	8.80	8.50	9.70	10.00	9.10	8.60	8.99
Delaware	13.50	14.20	13.30	13.50	13.00	13.00	13.00	14.00	14.20	14.50	14.00	13.80	13.67
Maryland	12.60	12.80	12.50	12.10	11.90	11.60	11.50	10.90	12.40	12.90	12.20	12.70	12.18
Virginia	9.90	10.50	9.40	10.40	9.10	9.60	8.90	8.70	9.60	10.20	10.10	10.60	9.75
West Virginia	9.00	10.10	9.40	9.80	8.90	9.30	9.20	9.80	8.40	9.50	9.20	10.10	9.39
North Carolina	8.30	8.90	7.80	8.80	8.50	8.00	8.30	7.50	7.30	8.60	8.30	7.70	8.17
South Carolina	5.78	6.20	6.00	6.80	5.40	5.90	5.70	5.90	6.30	6.40	6.20	5.80	6.03
Georgia	5.80	6.30	5.70	6.50	6.20	6.00	7.10	7.00	6.70	6.40	6.00	5.40	6.26
Florida	6.00	8.00	6.00	7.00	6.00	7.00	5.00	6.20	6.60	6.40	6.00	7.00	6.43
Kentucky	9.10	10.30	9.90	10.00	9.10	9.90	9.50	9.90	10.10	10.40	9.70	9.70	9.80
Tennessee	6.40	7.40	7.10	7.60	6.70	7.00	7.20	7.10	7.70	7.70	7.40	7.60	7.24
Alabama	5.20	5.30	5.50	5.70	5.40	5.70	5.70	5.50	6.30	5.90	5.80	6.00	5.67
Mississippi	5.00	5.50	5.80	5.90	5.70	5.70	5.70	6.00	5.60	6.50	5.40	5.60	5.70
Arkansas	5.50	5.70	6.10	6.90	5.90	6.70	5.80	5.90	6.00	6.20	5.60	6.70	6.08
Louisiana	5.50	7.00	6.00	6.50	5.90	7.00	6.00	6.70	6.60	7.30	6.30	5.60	6.37
Oklahoma	6.70	7.40	7.30	6.70	6.90	7.50	6.90	6.90	7.50	7.30	7.40	7.00	7.12
Texas	6.10	6.40	7.10	7.00	6.70	6.70	7.00	6.80	7.20	7.20	6.60	6.80	6.80
Montana	8.80	9.20	8.60	9.00	9.00	9.10	9.10	7.90	8.80	8.30	8.50	8.20	8.71
Idaho	7.80	7.80	8.20	8.20	8.30	8.20	8.30	8.30	8.20	7.60	7.70	8.00	8.05
Wyoming	7.80	8.40	8.40	9.00	9.40	9.20	9.30	10.00	8.30	9.00	10.10	8.20	8.92
Colorado	8.60	9.90	10.00	10.10	10.00	10.50	10.20	9.10	9.80	9.50	9.10	9.40	9.68
New Mexico	8.70	7.00	8.00	8.20	7.60	7.80	6.80	8.00	7.80	8.50	7.40	9.50	7.94
Arizona	7.70	8.70	7.80	8.50	8.00	8.00	8.50	8.00	7.70	7.60	7.50	8.20	8.02
Utah	8.40	9.60	9.30	10.40	10.30	9.80	9.30	9.70	9.70	10.80	9.10	8.40	9.57
Nevada	------	------	10.00	10.60	10.70	9.50	8.30	9.00	8.30	9.00	8.00	8.00	9.14
Washington	8.60	9.80	9.20	9.50	9.00	9.10	9.30	9.30	8.90	9.20	8.70	8.00	9.05
Oregon	8.80	9.20	10.00	10.50	9.00	9.30	9.80	10.50	10.20	9.30	9.50	10.30	9.70
California	9.70	9.70	9.50	10.00	9.70	9.70	9.10	9.80	9.80	9.10	9.30	9.40	9.57
United States	9.44	9.86	9.75	9.45	8.92	9.65	9.47	9.54	10.06	10.29	9.54	9.44	9.62

Division of Crop and Livestock Estimates.

TABLE 364.—*Cattle and calves: Monthly average price per 100 pounds, Chicago, 1909-1926*

GOOD BEEF STEERS[1]

Year	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Average:													
1909-1913	6.60	6.64	7.03	7.11	7.17	7.23	7.20	7.46	7.60	7.25	7.14	6.98	7.12
1914-1920	10.98	10.81	11.11	11.41	11.54	11.96	12.28	12.40	12.46	12.12	11.48	11.06	11.64
1921-1925	8.78	8.78	9.18	9.02	9.16	9.30	9.76	9.84	9.59	9.57	9.04	8.76	9.23
1909	6.00	5.85	6.10	6.10	6.45	6.45	6.45	6.70	6.75	6.60	6.45	6.20	6.34
1910	6.20	6.35	7.35	7.55	7.50	7.50	7.10	6.85	6.80	6.60	6.20	6.00	6.83
1911	6.15	6.15	6.20	6.10	5.95	6.05	6.30	6.95	6.80	6.75	6.70	6.65	6.40
1912	6.85	6.60	7.20	7.65	7.95	8.00	7.90	8.50	9.15	7.90	8.10	7.85	7.80
1913	7.80	8.25	8.30	8.15	8.00	8.15	8.25	8.30	8.50	8.40	8.25	8.20	8.21
1914	8.45	8.30	8.35	8.50	8.40	8.60	8.80	9.10	9.35	9.05	8.60	8.35	8.65
1915	8.05	7.50	7.65	7.70	8.35	8.80	9.20	9.05	8.95	8.80	8.70	8.35	8.43
1916	8.35	8.35	8.75	9.10	9.50	9.85	9.25	9.45	9.40	9.75	10.15	10.00	9.33
1917	10.15	10.50	11.25	11.75	11.90	12.15	12.35	12.70	13.10	11.70	11.10	11.40	11.67
1918	12.10	12.00	12.60	14.70	15.40	15.85	16.05	15.75	16.[illegible]	14.80	15.05	14.90	14.60
1919	15.80	15.95	16.05	15.85	15.00	13.55	15.60	16.45	15.50	16.15	15.10	14.35	15.45
1920	13.95	13.05	13.10	12.30	12.25	14.95	14.68	14.30	14.95	14.61	11.65	10.08	13.32
1921	8.94	8.57	9.41	8.22	8.33	7.94	8.09	8.32	7.67	7.59	7.52	7.31	8.16
1922	7.37	7.60	8.01	7.94	8.20	8.83	9.48	9.62	9.98	10.53	9.42	8.89	8.82
1923	9.17	8.86	8.83	9.01	9.41	9.94	10.05	10.48	10.12	9.90	9.36	8.92	9.50
1924	9.14	9.33	9.59	9.83	9.83	9.53	9.91	9.54	9.47	9.57	9.18	8.98	9.49
1925	9.28	9.54	10.06	10.12	10.03	10.28	11.29	11.26	10.73	10.28	9.74	9.71	10.19
1926	9.59	9.50	9.46	9.22	9.12	9.59	9.40	9.33	9.85	9.47	9.34	9.60	9.46

CALVES

Year	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average.													
1909-1913	8.69	8.25	8.38	7.33	7.59	7.94	8.23	8.90	9.47	9.17	8.94	9.12	8.50
1914-1920	13.30	13.00	12.72	11.65	11.80	12.82	13.40	14.52	15.08	13.84	13.44	12.61	13.18
1921-1925	9.98	10.31	9.50	8.22	8.81	8.76	9.54	10.37	10.90	9.63	8.66	9.25	9.50
1909	7.60	6.85	7.00	6.30	6.35	6.50	7.00	7.50	7.60	8.10	7.40	8.25	7.20
1910	8.60	8.65	9.00	7.85	7.35	7.85	7.60	7.75	8.50	8.65	8.75	8.50	8.25
1911	8.75	8.40	7.40	6.60	7.25	7.60	7.40	8.00	8.75	8.60	8.35	7.85	7.91
1912	8.75	7.50	8.00	7.40	7.75	8.00	8.75	9.75	11.25	10.00	9.85	10.25	8.94
1913	9.75	9.85	10.50	8.50	9.25	9.75	10.40	11.50	11.25	10.50	10.35	10.75	10.20
1914	11.00	10.75	9.00	8.85	9.50	9.40	10.60	11.00	11.40	10.65	10.35	8.65	10.10
1915	9.85	10.35	10.00	8.40	9.15	9.60	10.25	11.50	11.25	10.85	10.15	9.65	10.08
1916	10.15	10.65	9.65	8.75	10.40	11.25	11.40	12.00	12.40	11.50	11.85	11.75	10.98
1917	13.40	12.65	13.40	12.50	13.25	13.40	13.00	15.15	15.00	14.85	13.50	15.25	13.78
1918	15.35	14.15	15.25	14.50	13.50	16.02	16.67	17.28	18.63	16.83	16.86	16.01	15.92
1919	15.62	15.75	15.01	14.31	14.66	16.37	17.88	19.62	20.52	18.05	17.60	16.56	16.83
1920	17.74	16.73	16.73	14.22	12.12	13.68	13.98	15.08	16.39	14.18	13.74	10.39	14.58
1921	11.49	11.02	10.33	8.12	8.66	8.72	9.73	9.39	10.71	8.68	7.70	7.81	9.36
1922	8.36	9.16	8.26	6.97	8.46	8.89	8.90	10.88	11.92	9.65	8.91	9.42	9.15
1923	10.08	10.63	9.32	8.68	9.51	9.31	9.60	10.01	9.98	9.39	7.82	8.69	9.42
1924	10.16	9.82	9.24	8.57	8.64	8.00	8.57	9.62	9.72	9.24	8.28	9.04	9.08
1925	9.82	10.92	10.35	8.76	8.79	8.87	10.91	11.94	12.18	11.19	10.60	11.30	10.47
1926	12.18	12.43	12.06	9.91	11.04	11.09	11.38	12.46	12.59	11.80	11.09	11.31	11.61

Division of Statistical and Historical Research.

Figures prior to July, 1920, for good beef steers, and prior to June, 1918, for calves, compiled from Chicago Drovers Journal Yearbook; subsequent figures compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Prices for cattle, 1900-1908, and for calves, 1901-1908, are available in 1924 Yearbook, p. 855, Table 451.

[1] Bulk of sales, 1,100 pounds up. July 1, 1925 classification changed to 1,100-1,500 pounds.

TABLE 365.—*Cattle, choice steers for chilled beef: Average price per 100 pounds by months, Buenos Aires, 1909–1925*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Averages:													
1909–1913	3.54	3.58	3.72	3.82	3.89	3.90	4.02	4.19	4.34	4.51	4.41	4.00	3.99
1914–1920	6.52	6.59	6.61	6.65	6.59	6.37	6.68	7.07	7.41	7.50	6.93	6.63	6.80
1921–1925	4.48	4.53	4.66	4.49	4.32	4.36	4.55	4.73	4.97	5.02	4.59	4.32	4.59
1909	3.00	3.03	3.07	3.00	3.07	3.20	3.41	3.64	3.95	4.38	4.21	3.81	3.48
1910	3.34	3.30	3.61	3.61	3.54	3.64	3.71	3.98	4.28	4.62	4.32	3.47	3.78
1911	3.57	3.61	3.84	3.81	3.84	3.95	4.15	4.18	4.21	4.18	4.01	3.47	3.90
1912	3.58	3.78	3.62	3.73	3.72	3.71	3.71	4.05	4.15	4.15	4.15	4.08	3.87
1913	4.22	4.19	4.44	4.93	5.26	5.02	5.10	5.12	5.12	5.22	5.35	5.18	4.93
1914	4.96	5.27	5.47	5.69	5.47	5.67	5.73	6.01	6.21	6.29	5.86	5.80	5.70
1915	5.72	5.61	5.56	5.65	5.44	5.54	5.97	6.71	7.45	7.52	7.11	6.59	6.24
1916	6.93	7.15	6.91	6.93	6.84	6.31	6.42	6.54	6.84	7.16	6.95	6.74	6.81
1917	6.69	6.56	6.49	6.31	6.46	6.34	6.37	6.40	6.16	6.54	6.03	5.55	6.32
1918	5.39	5.83	5.88	6.06	6.04	5.98	6.21	7.49	8.41	8.49	8.03	8.06	6.82
1919	7.96	7.75	7.74	7.85	8.03	7.21	8.60	8.92	9.63	9.20	8.25	7.72	8.24
1920	7.96	7.97	8.20	8.06	7.88	7.56	7.47	7.42	7.15	7.27	6.28	5.98	7.43
1921	5.93	5.95	5.71	5.41	4.40	4.10	3.69	4.12	4.74	4.96	4.90	4.39	4.86
1922	4.68	4.53	3.97	3.30	3.31	3.90	4.41	4.50	4.24	3.84	3.30	3.25	3.94
1923	3.08	3.25	3.82	4.06	3.83	3.56	3.62	3.36	3.82	4.10	3.48	3.23	3.60
1924	3.19	3.40	3.61	3.50	3.56	3.76	4.51	4.93	5.15	5.95	5.62	5.42	4.38
1925	5.54	5.54	6.20	6.20	6.51	6.48	6.54	6.72	6.91	6.25	5.66	5.32	6.16
1926	5.40	5.42	5.27	5.39	5.52	5.24	5.58	5.70	5.45	4.63	4.06	4.21	5.16

Division of Statistical and Historical Research. Calculated from quotations in the Review of the River Plate. Prices prior to May, 1924, originally quoted on basis of price per head supplemented from 1916 by price per pound of dressed carcass weight. Calculations assume average dressed weight of 730 pounds or live weight of 1,259 pounds. Live-weight quotations per pound from May, 1924. Converted from Argentine currency at average monthly rate of exchange.

TABLE 366.—*Cattle and calves: Trend of average farm prices and average market prices per 100 pounds at Chicago, 1910–1926*

Year	Farm price[1]		Average market price at Chicago		Price relatives, August, 1909–July, 1914=100			
					Farm price		Market price	
	Beef cattle	Veal calves	Beef cattle	Veal calves	Beef cattle	Veal calves	Beef cattle	Veal calves
	Dollars	*Dollars*	*Dollars*	*Dollars*				
1910	4.78	6.42	6.83	8.25	91.9	95.1	92.5	93.1
1911	4.46	6.04	6.40	7.91	85.8	89.5	86.7	89.3
1912	5.14	6.45	7.80	8.94	98.8	95.6	105.7	100.9
1913	5.91	7.48	8.21	10.20	113.7	110.8	111.2	115.1
1914	6.24	7.83	8.65	10.10	120.0	116.0	117.2	114.0
1915	6.01	7.63	8.43	10.08	115.6	113.0	114.2	113.8
1916	6.48	8.35	9.33	10.98	124.6	123.7	126.4	123.9
1917	8.17	10.51	11.67	13.78	157.1	155.7	158.1	155.5
1918	9.46	11.91	14.60	15.92	181.9	176.4	197.8	179.7
1919	9.61	12.76	15.45	16.83	184.8	189.0	209.3	190.0
1920	8.38	11.80	13.32	14.58	161.2	174.8	180.5	164.6
1921	5.44	7.81	8.16	9.36	104.6	115.7	110.6	105.6
1922	5.43	7.68	8.82	9.15	104.4	113.8	119.5	103.3
1923	5.57	7.99	9.50	9.42	107.1	118.4	128.7	106.3
1924	5.59	8.12	9.49	9.08	107.5	120.3	128.6	102.5
1925	6.26	8.85	10.19	10.47	120.4	131.1	138.1	118.2
1926	6.46	9.61	9.46	11.61	124.2	142.4	128.2	131.0

Division of Statistical and Historical Research. Farm prices from Division of Crop and Livestock Estimates; market prices compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

[1] Weighted average.

TABLE 367.—*Cattle and calves: Average price per 100 pounds at six markets, by months, 1926*

CHICAGO

Classification	January	February	March	April	May	June	July	August	September	October	November	December	Average
Slaughter cattle:													
Beef steers—	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
1,500 pounds up, good and choice	11.12	10.83	10.51	10.04	9.78	9.97	9.62	9.39	10.46	10.10	9.79	9.94	10.18
1,100 to 1,500 pounds—													
Choice	11.60	11.45	10.92	10.30	10.13	10.26	10.18	10.17	11.11	11.26	11.11	11.58	10.84
Good	10.45	10.41	10.27	9.71	9.63	9.70	9.64	9.54	10.26	10.34	10.46	10.88	10.11
Medium	9.26	9.38	9.37	8.88	8.91	8.95	8.83	8.48	9.05	8.64	8.71	9.37	8.99
Common	7.77	8.09	8.24	7.68	7.70	7.89	7.41	6.82	7.31	6.98	7.01	7.42	7.53
Under 1,100 pounds—													
Choice	11.84	11.66	11.09	10.33	10.20	10.22	10.43	10.54	11.47	11.89	12.13	12.98	11.23
Good	10.48	10.54	10.38	9.74	9.70	9.70	9.94	9.88	10.54	10.62	10.88	11.58	10.33
Medium	9.24	9.36	9.35	8.85	8.86	8.88	8.81	8.43	8.98	8.80	8.80	9.49	8.99
Common	7.59	7.88	8.05	7.57	7.56	7.74	7.26	6.79	7.18	6.91	6.88	7.40	7.40
Low cutter and cutter	5.46	5.87	6.25	6.01	6.14	6.37	5.92	5.50	5.56	5.50	5.53	5.70	5.82
Yearling steers and heifers under 850 pounds, good and choice	10.41	10.38	10.05	9.46	9.41	9.59	9.87	9.86	10.56	10.97	10.86	11.25	10.22
Heifers—													
850 pounds up, good and choice	9.00	8.84	8.88	8.62	8.66	8.88	8.89	9.09	9.47	9.63	9.31	9.34	9.05
All weights, common and medium	7.14	7.24	7.37	7.16	7.25	7.35	7.06	7.13	7.18	7.19	7.08	6.89	7.17
Cows—													
Good and choice	7.32	7.10	7.41	7.16	7.14	7.34	7.06	7.24	6.85	6.82	6.32	6.62	7.03
Common and medium	5.55	5.39	5.70	5.58	5.98	5.73	5.31	5.46	5.21	5.24	4.98	5.27	5.45
Low cutter and cutter	4.26	4.10	4.28	4.24	4.84	4.32	4.04	4.13	4.18	4.20	4.06	4.34	4.25
Bulls—													
1,500 pounds up, good and choice	6.42	6.26	6.34	6.44	6.67	6.56	6.64	6.74	6.43	6.30	6.42	6.59	6.48
Under 1,500 pounds (yearlings excluded)—													
Good and choice	6.44	6.33	6.54	6.62	6.92	6.74	6.84	6.84	6.58	6.54	6.65	6.84	6.66
Cutter to medium	5.43	5.61	5.73	5.90	6.05	5.75	5.70	5.44	5.24	5.36	5.56	5.81	5.63
Slaughter calves (milk-fed excluded)—													
Medium to choice	7.48	7.31	6.98	6.87	7.40	7.27	7.25	7.86	7.21	7.40	7.25	7.28	7.30
Cull and common	5.50	5.66	5.63	5.54	5.73	5.64	5.62	5.73	5.42	5.46	5.38	5.38	5.56
Vealers—													
Medium to choice	12.18	12.43	12.06	9.91	11.04	11.09	11.38	12.4[illegible]	12.59	11.80	11.09	11.31	11.61
Cull and common	8.31	8.27	8.14	6.70	7.26	7.67	7.85	8.26	8.17	8.06	8.30	8.32	7.94
Feeder and stocker cattle and calves:													
Steers 800 pounds up—													
Good and choice	8.34	8.38	8.68	8.46	8.62	8.70	8.05	7.55	7.77	7.63	7.67	7.72	8.13
Common and medium	6.92	7.09	7.43	7.27	7.43	7.45	6.72	6.45	6.53	6.23	6.26	6.47	6.85
Steers under 800 pounds—													
Good and choice	8.14	8.22	8.41	8.20	8.38	8.43	7.96	7.59	7.86	7.73	7.75	7.85	8.04
Common and medium	6.62	6.75	7.02	6.92	7.16	7.15	6.50	6.46	6.64	6.24	6.17	6.44	6.67
Heifers, common to choice	5.68	5.79	5.94	5.88	6.40	6.33	5.79	5.39	5.85	5.99	5.87	5.88	5.90
Cows, common to choice	4.59	5.00	5.08	5.04	5.50	5.42	5.00	4.72	4.73	4.85	4.75	4.86	4.96

TABLE 367.—*Cattle and calves: Average price per 100 pounds at six markets, by months, 1926*—Continued

EAST ST. LOUIS

Classification	January	February	March	April	May	June	July	August	September	October	November	December	Average
Slaughter cattle:													
Beef steers—													
1,100 to 1,500 pounds—	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Choice	11.50	11.19	10.76	10.14	9.98	10.16	10.11	9.78	10.91	11.00	10.77	10.95	10.60
Good	10.22	10.08	9.97	9.54	9.33	9.61	9.54	9.29	10.20	10.06	9.74	10.31	9.82
Medium	8.72	8.76	8.86	8.64	8.50	8.46	7.98	7.45	8.24	8.20	8.34	8.53	8.39
Common	7.11	7.27	7.50	7.43	7.26	6.81	6.14	5.71	6.13	6.15	6.25	6.46	6.68
Under 1,100 pounds—													
Choice	11.59	11.44	10.99	10.26	10.09	10.21	10.47	10.43	11.37	11.87	11.79	12.30	11.07
Good	10.22	10.27	10.12	9.60	9.48	9.68	9.85	9.76	10.60	10.83	10.78	10.88	10.17
Medium	8.57	8.76	8.95	8.66	8.57	8.49	8.14	7.94	8.66	8.61	8.68	8.60	8.55
Common	6.87	7.10	7.38	7.31	7.13	6.65	6.08	5.76	6.34	6.26	6.38	6.54	6.65
Low cutter and cutter	5.22	5.49	5.72	5.93	5.76	5.28	4.97	4.73	5.18	5.25	5.25	5.43	5.35
Yearling steers and heifers under 850 pounds, good and choice	10.07	10.08	10.04	9.74	9.52	9.84	9.87	10.12	10.47	10.75	10.78	10.57	10.15
Heifers—													
850 pounds up, good and choice	8.44	8.50	8.63	8.59	8.00	8.00	8.00	8.55	8.96	9.23	9.24	8.71	8.57
All weights, common and medium	5.85	6.35	6.75	6.85	6.82	7.14	6.37	6.07	6.86	6.34	6.37	6.26	6.50
Cows—													
Good and choice	7.10	7.02	7.28	7.30	7.27	6.91	6.52	6.56	6.63	6.68	6.60	6.55	6.87
Common and medium	5.50	5.62	5.92	6.05	6.13	5.79	5.28	5.30	5.41	5.31	5.27	5.10	5.56
Low cutter and cutter	4.11	4.06	4.25	4.40	4.63	4.27	3.89	3.80	4.15	4.07	4.06	3.96	4.14
Bulls—													
1,500 pounds up, good and choice	6.48	6.39	6.50	6.50	6.60	6.50	6.35	6.25	6.20	6.13	6.12	6.12	6.34
Under 1,500 pounds (yearlings excluded)—													
Good and choice	6.63	6.51	6.68	6.76	6.88	6.62	6.48	6.38	6.34	6.27	6.25	6.30	6.51
Cutter to medium	5.09	5.15	5.43	5.55	5.66	5.34	5.10	4.99	4.98	4.98	5.14	5.31	5.23
Slaughter calves (milk-fed excluded)—													
Medium to choice	6.94	7.35	7.50	6.78	6.90	7.50	7.46	7.46	7.49	6.96	6.82	7.25	7.21
Cull and common	4.65	5.20	5.50	4.91	5.15	5.67	5.75	5.75	5.63	5.37	5.29	5.38	5.35
Vealers—													
Medium to choice	12.01	12.19	11.56	9.32	9.82	10.14	10.36	11.23	11.92	11.74	10.42	11.01	10.98
Cull and common	7.58	7.40	7.07	5.56	5.99	6.61	6.50	6.71	6.77	6.91	6.21	6.47	6.65
Feeder and stocker cattle and calves:													
Steers 800 pounds up—													
Good and choice	8.30	8.38	8.39	8.38	8.48	8.50	7.72	7.22	7.54	7.48	7.63	7.62	7.97
Common and medium	6.58	6.62	6.65	6.76	6.96	7.00	6.34	5.87	6.15	6.08	6.15	6.12	6.44
Steers under 800 pounds—													
Good and choice	8.04	8.12	8.14	8.13	8.23	8.25	7.60	7.27	7.54	7.41	7.58	7.62	7.83
Common and medium	6.34	6.38	6.41	6.51	6.71	6.75	6.13	5.79	6.06	6.04	6.10	6.12	6.28
Heifers, common to choice	5.39	5.44	5.70	5.81	6.33	6.04	5.82	5.51	5.83	5.80	5.75	5.75	5.76
Cows, common to choice	4.40	4.49	4.77	4.92	5.16	4.85	4.55	4.24	4.52	4.46	4.50	4.50	4.61

FORT WORTH

Slaughter cattle:													
Beef steers—													
1,100 to 1,500 pounds—													
Medium	7.51	7.42	7.41	6.98	6.52	6.26	6.04	6.00	6.33	6.67	6.75	6.75	6.72
Common	5.62	5.64	6.08	5.99	5.69	5.44	5.20	5.12	5.24	5.50	5.50	5.50	5.54
Under 1,100 pounds—													
Good	8.62	8.54	8.46	8.22	7.79	7.24	7.13	7.36	7.76	8.12	8.12	8.12	7.96
Medium	7.25	7.16	7.24	7.15	6.56	6.09	5.98	6.10	6.46	6.75	6.75	6.75	6.69
Common	5.25	5.27	5.79	5.92	5.56	5.22	5.22	5.24	5.35	5.50	5.50	5.50	5.44
Low cutter and cutter	3.88	3.92	4.53	4.75	4.67	4.39	4.38	4.38	4.39	4.50	4.50	4.50	4.40
Heifers—													
850 pounds up, good and choice	7.45	7.35	7.38	6.76	6.50	6.38	6.40	6.89	6.75	7.06	7.00	7.00	6.91
All weights, common and medium	5.20	5.33	5.44	5.14	5.02	4.93	4.90	5.07	4.98	5.19	5.37	5.40	5.16
Cows—													
Good and choice	5.34	5.81	6.14	5.89	5.81	5.77	5.63	5.70	5.48	5.31	5.51	5.58	5.66
Common and medium	4.21	4.60	4.80	4.64	4.60	4.68	4.49	4.45	4.46	4.34	4.49	4.58	4.53
Low cutter and cutter	3.25	3.50	3.56	3.57	3.62	3.73	3.39	3.14	3.50	3.44	3.48	3.56	3.48
Bulls—													
Under 1,500 pounds (yearlings excluded)—													
Good and choice	4.78	5.16	5.50	5.46	5.66	5.48	5.50	5.01	5.11	5.12	5.12	5.12	5.25
Cutter to medium	3.81	4.01	4.25	4.33	4.58	4.43	4.46	4.13	4.24	4.25	4.25	4.25	4.25
Slaughter calves (milk fed excluded)—													
Medium to choice	7.58	7.96	8.40	7.32	7.51	7.46	7.66	7.63	7.23	6.86	6.82	7.27	7.48
Cull and common	5.17	5.52	5.94	5.37	5.42	5.56	5.68	5.72	5.55	5.23	5.23	5.48	5.49
Vealers—													
Medium to choice	8.10	8.39	9.00	8.30	8.74	8.54	8.72	8.96	8.84	9.44	8.24	8.01	8.61
Cull and common	5.39	5.70	6.08	5.72	5.82	5.78	5.98	6.08	6.24	6.47	5.94	5.82	5.92
Feeder and stocker cattle and calves:													
Steers 800 pounds up—													
Good and choice	7.74	7.76	7.85	7.64	7.66	7.48	7.44	7.28	7.21	7.12	7.23	7.25	7.47
Common and medium	6.00	6.00	6.10	6.04	6.12	6.00	6.00	6.00	6.00	5.80	5.86	5.88	5.98
Steers under 800 pounds—													
Good and choice	7.60	7.62	7.72	7.56	7.68	7.50	7.44	7.28	7.30	7.18	7.25	7.25	7.45
Common and medium	5.74	5.75	5.85	5.82	6.00	5.88	5.88	5.88	5.88	5.78	5.88	5.88	5.85
Cows, common to choice	3.90	4.30	4.50	4.26	4.44	------	------	------	4.38	4.37	4.35	4.39	------

TABLE 367.—*Cattle and calves: Average price per 100 pounds at six markets, by months, 1926*—Continued

KANSAS CITY

Classification	January	February	March	April	May	June	July	August	September	October	November	December	Average
Slaughter cattle:													
Beef steers—	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
1,500 pounds up, good and choice	10.65	10.37	9.96	9.30	9.20	9.49	9.21	8.77	9.73	9.47	9.06	9.30	9.54
1,100 to 1,500 pounds—													
Choice	11.00	10.68	10.25	9.64	9.52	9.85	9.54	9.36	10.54	10.54	10.20	10.53	10.14
Good	9.58	9.54	9.34	8.89	8.86	9.16	8.72	8.50	9.61	9.50	9.26	9.58	9.21
Medium	8.35	8.46	8.50	8.10	8.06	8.11	7.50	7.21	7.93	7.74	7.70	8.08	7.98
Common	6.79	7.08	7.15	6.99	6.86	6.67	6.08	5.56	6.10	6.09	6.09	6.19	6.47
Under 1,100 pounds—													
Choice	11.04	10.86	10.40	9.78	9.55	9.95	9.87	9.85	11.01	11.21	11.17	11.72	10.53
Good	9.56	9.62	9.52	9.02	8.89	9.27	9.04	8.89	9.97	9.87	9.82	10.44	9.49
Medium	8.32	8.52	8.57	8.16	8.06	8.17	7.68	7.52	8.16	8.02	8.06	8.31	8.13
Common	6.64	6.96	7.03	6.87	6.70	6.57	6.19	5.90	6.26	6.17	6.21	6.26	6.48
Low cutter and cutter	4.80	5.34	5.38	5.38	5.28	5.21	5.04	4.75	4.98	5.00	5.00	5.00	5.10
Yearling steers and heifers under 850 pounds, good and choice	9.93	9.91	9.80	9.07	8.81	9.44	9.46	9.51	10.32	10.50	10.50	10.58	9.82
Heifers—													
850 pounds up, good and choice	8.35	8.25	8.23	7.79	7.76	8.09	8.02	8.02	8.60	8.74	8.75	8.67	8.27
All weights, common and medium	5.94	6.12	6.64	6.47	6.47	6.42	6.16	6.08	6.25	6.12	6.25	6.21	6.26
Cows—													
Good and choice	6.73	6.70	7.06	6.82	6.91	6.90	6.48	6.36	6.42	6.33	6.38	6.39	6.62
Common and medium	5.08	5.15	5.40	5.36	5.51	5.37	4.83	4.73	4.89	4.83	5.02	5.03	5.10
Low cutter and cutter	3.89	3.96	4.03	4.08	4.28	4.12	3.77	3.64	3.90	3.91	4.09	4.07	3.98
Bulls—													
1,500 pounds up, good and choice	6.09	5.96	6.13	6.14	6.44	5.97	5.90	5.57	5.46	5.56	5.88	6.16	5.94
Under 1,500 pounds (yearlings excluded)—													
Good and choice	6.24	6.18	6.50	6.51	6.74	6.25	6.14	5.70	5.58	5.63	5.95	6.23	6.14
Cutter to medium	4.87	4.96	5.26	5.30	5.52	5.07	4.96	4.60	4.59	4.69	4.85	5.01	4.97
Slaughter calves (milk fed excluded)—													
Medium to choice	6.88	7.13	7.47	7.23	7.20	7.26	7.12	6.82	6.81	6.78	7.16	7.17	7.09
Cull and common	4.54	4.75	4.99	4.96	5.00	5.00	4.84	4.62	4.66	4.76	5.00	5.01	4.84
Vealers—													
Medium to choice	9.68	10.04	9.71	8.32	9.36	9.10	9.22	9.86	10.61	10.61	9.28	9.11	9.58
Cull and common	6.14	6.18	6.05	5.26	5.70	5.94	5.84	6.01	6.21	6.12	5.64	5.56	5.89
Feeder and stocker cattle and calves:													
Steers 800 pounds up—													
Good and choice	8.38	8.48	8.55	8.28	8.27	8.28	7.70	7.41	7.67	7.46	7.42	7.58	7.96
Common and medium	6.86	6.88	6.97	6.86	6.85	6.81	6.20	5.72	5.92	5.86	5.88	5.97	6.40
Steers under 800 pounds—													
Good and choice	8.24	8.45	8.60	8.43	8.45	8.39	7.78	7.58	7.82	7.70	7.64	7.76	8.07
Common and medium	6.26	6.44	6.52	6.48	6.47	6.44	6.09	5.85	6.02	5.84	5.78	5.88	6.17
Heifers, common to choice	6.12	6.34	6.62	6.51	6.49	6.24	6.04	5.86	6.13	5.94	5.95	6.00	6.19
Cows, common to choice	4.66	4.82	5.26	5.17	5.32	4.88	4.40	4.26	4.50	4.42	4.50	4.50	4.72
Calves (steers), common to choice	6.99	7.06	7.12	7.10	7.08	7.05	6.73	6.62	6.77	6.92	7.42	7.33	7.02

OMAHA

Slaughter cattle:													
Beef steers—													
1,500 pounds up, good and choice	10.51	10.19	9.88	9.22	9.14	9.45	9.22	8.96	10.10	9.62	9.24	9.28	9.57
1,100 to 1,500 pounds—													
Choice	10.84	10.60	10.22	9.58	9.56	9.89	9.73	9.62	10.78	10.71	10.67	10.83	10.25
Good	9.70	9.59	9.35	8.86	8.81	9.18	9.13	8.85	9.96	9.71	9.67	9.92	9.39
Medium	8.53	8.56	8.60	8.24	8.17	8.37	8.12	7.83	8.48	7.96	8.00	8.04	8.24
Common	6.80	6.98	7.18	7.06	7.10	7.06	6.74	6.42	6.60	6.06	6.11	6.24	6.70
Under 1,100 pounds—													
Choice	10.99	10.83	10.41	9.70	9.60	9.91	9.96	9.93	11.04	11.29	11.53	12.07	10.60
Good	9.77	9.84	9.58	9.02	8.87	9.19	9.23	9.18	10.06	9.98	10.17	10.52	9.62
Medium	8.50	8.72	8.67	8.27	8.17	8.33	8.27	7.90	8.46	8.05	8.17	8.40	8.33
Common	6.68	7.05	7.18	6.96	7.04	7.01	6.86	6.46	6.55	6.08	6.12	6.30	6.69
Low cutter and cutter	5.00	5.35	5.48	5.36	5.54	5.60	5.48	5.16	5.09	4.78	4.88	5.05	5.23
Yearling steers and heifers under 850 pounds, good and choice	9.84	9.86	9.63	9.00	8.96	9.25	9.34	9.42	10.38	10.41	10.46	10.62	9.76
Heifers—													
850 pounds up, good and choice	8.40	8.33	8.43	7.89	7.80	8.28	8.37	8.44	8.59	8.71	8.84	8.74	8.40
All weights, common and medium	5.86	6.11	6.46	6.52	6.42	6.59	6.39	6.40	6.36	6.18	6.37	6.26	6.33
Cows—													
Good and choice	6.88	6.76	7.02	6.90	7.00	7.13	6.86	6.71	6.62	6.43	6.70	6.47	6.79
Common and medium	5.14	5.24	5.44	5.43	5.79	5.64	5.09	4.94	4.93	4.82	5.15	5.01	5.22
Low cutter and cutter	4.00	4.15	4.14	4.14	4.58	4.45	3.96	3.82	3.99	3.98	4.18	4.10	4.12
Bulls—													
1,500 pounds up, good and choice	6.04	5.86	6.11	6.33	6.65	6.10	6.08	5.87	5.66	5.58	5.96	6.17	6.03
Under 1,500 pounds (yearlings excluded)—													
Good and choice	6.13	5.93	6.22	6.45	6.78	6.22	6.19	5.94	5.77	5.72	6.09	6.30	6.14
Cutter to medium	4.96	5.00	5.05	5.30	5.62	5.14	5.08	4.92	4.71	4.71	5.07	5.19	5.06
Slaughter calves (milk fed excluded)—													
Medium to choice	7.02	7.38	7.22	6.70	7.37	6.93	6.64	6.94	7.21	6.32	6.50	6.91	6.93
Cull and common	4.86	5.12	5.13	4.82	5.20	4.92	4.61	4.74	5.02	4.52	4.75	5.03	4.89
Vealers—													
Medium to choice	9.64	9.74	9.68	8.27	9.34	9.06	8.60	8.76	10.04	10.15	9.48	8.64	9.28
Cull and common	6.60	6.65	6.46	5.45	5.89	6.09	5.84	5.85	6.65	6.64	6.10	5.54	6.15
Feeder and stocker cattle and calves													
Steers 800 pounds up—													
Good and choice	8.50	8.63	8.70	8.39	8.42	8.42	7.86	7.54	8.01	7.83	7.83	7.69	8.15
Common and medium	6.86	6.96	7.10	6.96	7.00	7.00	6.46	6.10	6.33	6.04	6.15	6.05	6.58
Steers under 800 pounds—													
Good and choice	8.32	8.52	8.63	8.45	8.46	8.50	7.92	7.61	7.98	7.82	8.03	7.85	8.17
Common and medium	6.42	6.60	6.73	6.66	6.71	6.75	6.36	6.10	6.33	6.07	6.11	5.95	6.40
Heifers, common to choice	5.38	5.60	6.26	6.38	6.38	6.38	6.14	6.00	6.11	5.92	6.04	6.04	6.05
Cows, common to choice	4.17	4.83	5.15	5.25	5.25	5.05	4.61	4.02	4.42	4.32	4.47	4.50	4.67
Calves (steers), common to choice	6.62	6.81	7.08	6.98	6.92	6.92	7.02	6.89	7.04	7.32	7.48	7.40	7.04

TABLE 367.—*Cattle and calves: Average price per 100 pounds at six markets, by months, 1926*—Continued

SOUTH ST. PAUL

Classification	January	February	March	April	May	June	July	August	September	October	November	December	Average
Slaughter cattle:													
Beef steers—													
1,100 to 1,500 pounds—	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Good	9.53	9.34	9.42	9.09	9.09	9.29	9.50	9.45	9.70	9.60	9.38	9.36	9.40
Medium	8.28	8.12	8.53	8.13	8.31	8.51	8.49	8.20	8.43	8.17	7.84	7.81	8.24
Common	6.82	6.84	7.19	6.88	7.00	7.19	7.05	6.45	6.51	6.26	6.08	6.16	6.70
Under 1,100 pounds—													
Good	9.58	9.54	9.72	9.21	9.07	9.20	9.54	9.55	9.95	10.16	10.04	10.02	9.63
Medium	8.18	8.17	8.68	8.24	8.29	8.47	8.53	8.20	8.41	8.38	8.00	7.86	8.28
Common	6.48	6.65	7.09	6.88	7.00	7.19	6.99	6.39	6.31	6.22	6.00	6.16	6.61
Low cutter and cutter	4.46	4.68	5.00	5.06	5.00	5.09	4.99	4.69	4.62	4.61	4.57	4.90	4.80
Yearling steers and heifers under 850 pounds, good and choice	9.13	8.96	9.44	9.31	9.01	8.90	9.20	9.34	9.98	10.38	10.38	10.41	9.54
Heifers—													
850 pounds up, good and choice	8.10	7.80	8.12	8.14	8.04	8.09	8.02	7.88	7.97	7.83	7.84	7.95	7.98
All weights, common and medium	5.85	5.80	6.08	6.24	6.28	6.35	6.10	5.76	5.88	5.72	5.71	5.80	5.96
Cows—													
Good and choice	6.56	6.54	6.95	6.92	7.08	6.92	6.64	6.62	6.39	5.98	6.02	6.21	6.57
Common and medium	4.74	4.84	5.31	5.23	5.55	5.47	5.00	4.92	4.73	4.57	4.63	4.73	4.98
Low cutter and cutter	3.50	3.59	3.87	3.84	4.24	4.06	3.66	3.52	3.63	3.61	3.62	3.61	3.73
Bulls—													
1,500 pounds up, good and choice	5.91	5.75	5.87	5.81	6.38	6.00	6.02	5.94	6.06	5.91	5.88	6.09	5.97
Under 1,500 pounds (yearlings excluded)—													
Good and choice	6.15	6.02	6.14	6.06	6.52	6.23	6.15	6.18	6.21	6.03	5.96	6.19	6.15
Cutter to medium	4.72	4.79	4.90	4.94	5.46	5.00	4.92	5.01	5.13	5.03	4.96	5.20	5.00
Slaughter calves (milk fed excluded)—													
Medium to choice	5.88	5.88	5.82	5.50	5.46	5.87	6.00	6.15	6.65	6.44	6.25	6.57	6.04
Cull and common	4.00	4.00	4.00	4.00	4.00	4.19	4.25	4.32	4.87	4.84	4.75	5.06	4.36
Vealers—													
Medium to choice	10.17	10.02	9.90	8.01	8.82	9.25	9.26	9.86	10.31	9.36	8.43	9.30	9.39
Cull and common	6.54	6.50	6.33	5.68	5.50	5.48	5.60	5.73	6.31	6.21	6.00	6.44	6.03
Feeder and stocker cattle and calves:													
Steers 800 pounds up—													
Good and choice	7.62	7.80	8.16	7.88	7.88	7.74	7.36	7.25	7.38	7.25	7.19	7.12	7.55
Common and medium	5.98	6.24	6.68	6.62	6.62	6.55	6.14	6.00	6.06	5.89	5.77	5.62	6.18
Steers under 800 pounds—													
Good and choice	7.46	7.77	7.96	7.88	7.88	7.74	7.36	7.26	7.58	7.16	7.12	7.12	7.52
Common and medium	5.75	6.12	6.46	6.38	6.38	6.26	5.77	5.64	6.00	5.64	5.56	5.50	5.96
Heifers, common to choice	5.00	5.00	5.28	5.56	6.11	5.93	5.39	5.12	5.16	5.00	5.00	5.00	5.29
Cows, common to choice	3.75	3.92	4.53	4.81	5.48	5.12	4.58	4.50	4.46	4.25	4.25	4.25	4.49
Calves (steers), common to choice	5.38	5.60	6.00	6.00	6.00	5.88	5.75	5.76	6.06	6.00	6.00	6.00	5.87

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

TABLE 368.—*Cattle: Prices of live steers in Chicago, wholesale prices of beef in Chicago and New York, and retail prices of certain beef cuts, 1913–1926*

Year	Live steers good to choice, Chicago	Beef, wholesale				Beef, retail											
		Good native steer, Chicago		Native sides, New York		Sirloin steak						Round steak					
						Chicago		New York		Average, leading cities		Chicago		New York		Average, leading cities	
		Price per pound	Wholesale as percentage of live steer price	Price per pound	Wholesale as percentage of live steer price	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price
	Cents	*Cents*	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*
1913	8.5	13.0	153	12.5	147	23.2	273	25.9	305	25.4	299	20.2	238	25.0	294	22.3	262
1914	9.0	13.6	151	13.5	150	25.3	283	26.8	298	25.9	288	22.4	249	26.3	292	23.6	262
1915	8.7	12.9	148	12.6	145	25.7	295	26.8	308	25.7	295	22.1	254	26.0	299	23.0	264
1916	9.6	13.8	144	13.4	140	26.8	279	28.1	293	27.3	284	22.6	235	27.4	285	24.5	255
1917	12.8	16.7	130	16.4	128	29.3	229	32.6	255	31.5	246	25.8	202	32.6	255	29.0	227
1918	16.4	22.1	135	20.9	127	35.3	215	40.9	249	38.9	237	32.3	197	42.3	258	36.9	225
1919	17.5	23.3	133	21.5	123	38.3	219	43.9	251	41.7	238	34.3	196	45.7	261	38.9	222
1920	14.5	23.0	159	20.8	143	43.0	297	46.9	323	43.7	301	36.3	250	47.3	326	39.5	272
1921	8.8	16.3	185	14.8	168	38.0	432	42.1	478	38.8	441	31.0	352	41.4	469	34.4	391
1922	9.5	15.0	158	13.8	145	37.2	392	41.1	433	37.4	394	29.1	306	39.6	417	32.3	340
1923	10.0	15.8	158	14.5	145	39.8	398	42.5	425	39.1	39.	30.7	307	40.8	408	33.5	335
1924	9.7	17.1	176	15.1	156	41.2	425	43.0	413	39.6	408	32.1	331	41.4	427	33.8	348
1925	10.6	18.0	170	15.9	150	43.7	412	45.4	428	40.6	383	34.2	323	43.1	407	34.7	327
1926	9.5	16.4	173	15.1	159	44.3	466	45.4	478	41.3	435	35.9	378	43.5	458	35.6	375

Table 368.—*Cattle: Prices of live steers in Chicago, wholesale prices of beef in Chicago and New York, and retail prices of certain beef cuts, 1913–1926*—Continued

Year	Beef, retail—Continued											
	Chuck roast						Rib roast					
	Chicago		New York		Average, leading cities		Chicago		New York		Average, leading cities	
	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price	Price per pound	Retail as percentage of live steer price
	Cents	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*	*Cents*	*Per cent*
1913	15.4	181	16.0	188	16.0	188	19.5	229	21.8	256	19.8	233
1914	16.9	188	16.8	187	16.7	186	20.7	230	22.1	246	20.4	227
1915	16.7	192	16.5	190	16.1	185	21.3	245	22.2	255	20.1	231
1916	16.6	173	17.3	180	17.1	178	21.9	228	23.2	242	21.2	221
1917	20.3	159	21.3	166	20.9	163	24.1	188	27.4	214	24.9	195
1918	25.9	158	28.5	174	26.6	162	29.7	181	35.3	215	30.7	187
1919	26.7	153	29.9	171	27.0	154	31.4	179	39.1	223	32.5	186
1920	25.9	179	28.9	199	26.2	181	33.7	232	40.5	279	33.2	229
1921	20.7	235	23.1	262	21.2	241	30.2	343	36.4	414	29.1	331
1922	19.1	201	21.4	225	19.7	207	28.8	303	35.3	372	27.6	291
1923	19.9	199	22.4	224	20.2	202	30.2	302	36.3	363	28.4	284
1924	21.0	216	23.1	238	20.8	214	31.6	326	36.9	380	28.8	297
1925	23.1	218	24.4	230	21.6	204	33.6	317	38.8	366	29.6	279
1926	25.2	265	24.6	259	22.5	237	34.9	367	38.8	408	30.3	319

Division of Statistical and Historical Research. All prices from Bureau of Labor Statistics.

TABLE 369.—*Cattle and calves: Monthly slaughter under Federal inspection, 1907–1926*

CATTLE

Calendar year	January	February	March	April	May	June	July	August	September	October	November	December	Total
1907	717, 935	569, 641	555, 476	634, 541	620, 114	588, 465	640, 535	667, 827	696, 271	801, 110	595, 692	545, 758	7, 633, 365
1908	642, 632	527, 369	519, 851	463, 445	490, 623	525, 134	563, 403	640, 332	767, 698	821, 193	680, 616	636, 964	7, 279, 260
1909	586, 542	489, 905	550, 719	508, 267	536, 101	543, 597	608, 030	652, 172	782, 309	892, 348	798, 967	764, 850	7, 713, 807
1910	632, 131	527, 361	599, 076	532, 904	551, 179	620, 862	614, 962	678, 668	795, 525	831, 406	779, 527	643, 999	7, 807, 600
1911	626, 060	535, 853	562, 077	499, 422	599, 084	614, 447	591, 317	719, 510	691, 720	828, 316	745, 810	605, 480	7, 619, 096
1912	674, 995	515, 056	563, 882	522, 278	562, 506	511, 135	507, 695	631, 623	643, 617	808, 361	690, 973	620, 457	7, 252, 578
1913	621, 744	489, 842	483, 693	554, 709	546, 781	556, 321	592, 959	582, 081	656, 410	701, 402	601, 937	590, 482	6, 978, 361
1914	585, 164	498, 991	476, 406	474, 177	473, 806	490, 302	505, 244	518, 165	650, 427	743, 686	658, 189	682, 180	6, 756, 737
1915	572, 748	466, 122	551, 991	507, 442	534, 457	573, 851	596, 142	590, 302	641, 411	736, 149	702, 134	680, 646	7, 153, 395
1916	622, 507	549, 956	597, 059	475, 566	564, 207	648, 209	562, 448	742, 534	790, 737	941, 049	971, 801	844, 385	8, 310, 458
1917	822, 932	662, 776	647, 251	654, 336	815, 071	844, 168	783, 559	865, 883	957, 253	1, 195, 587	1, 098, 796	1, 002, 540	10, 350, 152
1918	895, 275	784, 834	828, 216	914, 899	781, 755	829, 690	1, 019, 982	987, 237	1, 142, 754	1, 251, 041	1, 233, 081	1, 159, 785	11, 828, 549
1919	1, 119, 200	701, 353	640, 288	622, 123	720, 684	644, 463	854, 797	859, 409	855, 292	1, 073, 220	1, 040, 074	960, 181	10, 091, 084
1920	832, 231	630, 995	683, 139	637, 575	626, 304	656, 602	661, 172	685, 763	825, 484	843, 136	858, 946	667, 344	8, 608, 691
1921	689, 506	526, 177	620, 936	590, 043	569, 979	640, 186	579, 028	680, 419	689, 043	749, 756	686, 115	586, 192	7, 608, 280
1922	641, 513	569, 153	673, 701	589, 916	702, 203	724, 418	697, 303	761, 125	796, 377	883, 949	859, 413	778, 736	8, 677, 807
1923	745, 109	633, 710	687, 634	696, 757	762, 461	726, 962	724, 896	820, 514	809, 810	952, 795	845, 618	756, 250	9, 162, 516
1924	812, 459	669, 051	665, 156	689, 190	773, 334	669, 579	764, 104	785, 981	870, 171	1, 016, 289	951, 887	925, 874	9, 593, 075
1925	855, 179	656, 427	736, 313	731, 258	748, 514	731, 886	862, 053	811, 144	866, 183	1, 066, 528	860, 662	926, 892	9, 853, 039
1926	819, 179	694, 616	785, 545	765, 540	787, 664	852, 115	863, 672	811, 225	971, 460	995, 566	946, 759	886, 805	10, 180, 146

CALVES

Calendar year	January	February	March	April	May	June	July	August	September	October	November	December	Total
1907	128, 178	99, 283	122, 451	205, 410	224, 405	203, 916	220, 697	205, 840	197, 811	186, 620	126, 141	103, 635	2, 024, 387
1908	116, 868	87, 891	137, 120	196, 976	205, 225	210, 692	192, 034	184, 719	187, 400	180, 317	142, 560	116, 471	1, 958, 273
1909	134, 800	95, 221	149, 150	200, 106	228, 192	235, 741	213, 217	195, 623	205, 468	205, 064	171, 288	155, 147	2, 189, 017
1910	132, 412	116, 899	188, 441	221, 557	251, 746	237, 937	198, 425	206, 000	197, 135	187, 567	168, 323	131, 845	2, 238, 287
1911	135, 440	120, 845	180, 386	218, 434	243, 247	232, 261	198, 471	206, 971	184, 421	179, 838	155, 135	128, 094	2, 183, 543
1912	152, 064	126, 432	179, 813	244, 700	258, 331	228, 659	201, 085	192, 355	189, 765	193, 250	162, 837	148, 643	2, 277, 954
1913	139, 281	117, 987	141, 551	212, 374	204, 723	194, 613	182, 000	149, 292	158, 518	156, 562	124, 004	121, 509	1, 902, 414
1914	122, 486	99, 865	145, 226	185, 619	183, 052	186, 771	153, 448	129, 359	129, 637	135, 009	107, 279	119, 211	1, 696, 962
1915	108, 642	96, 096	156, 205	198, 515	205, 039	197, 462	161, 997	141, 289	138, 557	148, 061	141, 400	125, 439	1, 818, 702
1916	129, 231	143, 262	189, 472	233, 412	267, 422	228, 480	177, 605	206, 783	185, 928	203, 905	217, 370	184, 533	2, 367, 403
1917	203, 250	181, 581	211, 501	286, 191	344, 595	276, 501	276, 710	254, 711	271, 514	339, 324	280, 910	215, 930	3, 142, 721
1918	210, 444	192, 769	259, 854	351, 387	357, 353	312, 171	354, 721	273, 597	316, 816	306, 096	272, 076	249, 109	3, 456, 393
1919	294, 812	209, 834	295, 388	383, 414	391, 304	327, 060	399, 966	318, 769	317, 984	374, 619	344, 238	311, 639	3, 969, 027
1920	305, 125	283, 052	390, 053	382, 420	368, 614	431, 079	342, 765	332, 349	347, 578	314, 791	315, 971	244, 573	4, 058, 370
1921	282, 043	253, 692	360, 410	365, 541	366, 798	369, 696	324, 046	303, 796	321, 193	309, 136	292, 172	259, 045	3, 807, 568
1922	288, 487	279, 359	391, 439	365, 323	401, 340	388, 919	329, 445	344, 968	353, 095	382, 837	347, 711	308, 646	4, 181, 569
1923	351, 382	296, 698	367, 979	400, 322	466, 792	387, 905	378, 513	402, 643	338, 093	416, 388	370, 070	323, 538	4, 500, 323
1924	372, 859	345, 593	376, 709	465, 720	469, 692	408, 130	421, 292	374, 480	419, 113	473, 468	392, 395	415, 579	4, 935, 030
1925	394, 453	378, 070	466, 092	496, 306	480, 581	473, 487	472, 819	438, 772	422, 487	486, 011	398, 012	445, 471	5, 352, 561
1926	409, 526	378, 308	463, 675	461, 482	454, 938	480, 273	425, 406	379, 311	408, 114	446, 358	435, 152	410, 046	5, 152, 589

Bureau of Animal Industry.

TABLE 370.—*Beef and beef products: International trade, average 1911–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	144	940, 300	12	1, 423, 964	4	1, 917, 631	14	1, 694, 255
Australia	437	301, 882	[1] 6, 498	[1] 155, 722	[1] 1, 930	[1] 381, 233		[1] 215, 090
Brazil	48, 989	171	5, 852	184, 137	14, 138	167, 214		145, 389
Canada	3, 091	6, 448	2, 467	24, 380	431	25, 522	447	36, 312
China	85	8, 787	1, 414	6, 314	813	8, 641	577	7, 418
Denmark	18, 815	43, 485	11, 217	37, 103	11, 858	13, 632	12, 424	60, 224
Hungary			97	54	6, 799	12, 368	833	8, 508
Netherlands	256, 296	326, 176	109, 164	202, 545	224, 746	243, 505	211, 154	248, 403
New Zealand	398	80, 543	437	141, 494	613	131, 137	577	138, 672
Rumania	4	2, 566	544	4, 061	553	9, 939	437	13, 492
United States	17, 668	213, 722	19, 356	192, 368	18, 104	190, 259	15, 870	162, 640
Uruguay	152	119, 675		402, 696		348, 700		877, 302
PRINCIPAL IMPORTING COUNTRIES								
Austria-Hungary	12, 983	3, 762						
Belgium	6, 034	1, 577	150, 377	4, 341	231, 890	15, 783	191, 598	51, 246
British India	7, 434	773	8, 043	1, 227	8, 336	1, 285	10, 239	1, 289
British Malaya			2, 635	615	5, 653	568	6, 103	608
Chile	6, 636	298	852	167	579	180		
Cuba	37, 822		54, 051		54, 849			
Czechoslovakia			9, 461	17	2, 473		262	
Egypt	476		4, 697	22	5, 754	48	3, 801	10
Finland	14, 755	9	4, 317	34	3, 885	63	3, 499	101
France	41, 318	62, 361	164, 069	51, 865	253, 159	34, 618	260, 059	36, 986
Germany	212, 150	942	230, 906	1, 295	296, 410	1, 727	442, 993	3, 090
Hongkong			1, 608	433	1, 885	417	[2] 399	[2] 271
Irish Free State					10, 304	8, 187	11, 102	8, 115
Italy	131	(3)	28, 784	536	31, 498	557	26, 767	574
Japan	9, 002		70, 204		73, 474		56, 824	
Norway	20, 203	2, 337	21, 182	1, 605	22, 805	776	16, 620	754
Philippine Islands	15, 837		6, 438		9, 175		10, 377	
Poland			571	312	3, 154	1, 433	1, 765	14, 140
Spain	966	38	11, 615		15, 143	222	18, 413	
Sweden	12, 912	17, 285	15, 623	7, 685	20, 911	6, 684	13, 831	12, 904
Switzerland	9, 052	440	6, 937	722	5, 510	502	5, 483	749
Union of South Africa	17, 622	292	12, 183	1, 536	10, 503	9, 603	9, 601	22, 754
United Kingdom	1, 252, 292	27, 595	1, 788, 994	31, 463	1, 777, 823	44, 808	1, 854, 596	39, 689
Other countries	20, 468	872	21, 035	25, 185	23, 934	32, 599	10, 306	22, 759
Total	2, 044, 172	2, 162, 336	2, 861, 640	2, 903, 898	3, 149, 106	3, 609, 841	3, 186, 971	3, 323, 744

Division of Statistical and Historical Research. Official sources.

[1] Year beginning July 1. [2] Six months. [3] Not separately stated.

TABLE 371.—*Beef, frozen: Stocks in cold-storage warehouses and meat-packing establishments, United States, 1916–1926*

[Thousand pounds—i. e., 000 omitted]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
Average:												
1916–1920	241, 004	232, 368	211, 860	191, 820	155, 267	132, 130	115, 407	117, 061	114, 596	120, 943	149, 804	187, 302
1921–1925	95, 513	92, 530	86, 432	77, 177	64, 149	51, 252	43, 196	34, 901	31, 011	30, 970	42, 716	66, 881
1916	126, 374	132, 266	124, 954	118, 279	90, 176	73, 025	55, 109	58, 867	58, 303	66, 319	92, 815	158, 148
1917	202, 442	190, 909	169, 793	154, 193	118, 391	108, 007	109, 354	108, 729	100, 453	119, 221	179, 032	235, 664
1918	315, 572	292, 114	276, 114	268, 015	212, 725	190, 084	154, 638	180, 962	185, 144	194, 469	224, 312	229, 668
1919	298, 818	294, 514	265, 293	221, 725	184, 586	163, 913	162, 639	159, 279	162, 069	166, 244	184, 196	223, 311
1920	261, 812	252, 037	223, 145	196, 890	170, 455	130, 619	95, 297	77, 469	67, 010	58, 461	68, 663	89, 718
1921	120, 245	119, 965	122, 402	114, 063	100, 672	88, 836	76, 523	66, 262	50, 204	44, 296	49, 014	63, 188
1922	68, 495	61, 522	55, 785	50, 772	45, 341	37, 548	31, 593	27, 727	28, 210	34, 611	47, 929	73, 027
1923	91, 805	89, 272	75, 604	65, 292	54, 522	41, 207	34, 385	24, 112	24, 625	27, 590	43, 772	71, 024
1924	82, 984	79, 944	76, 769	68, 075	52, 941	41, 784	37, 028	29, 435	29, 135	28, 590	45, 857	76, 731
1925	114, 034	111, 947	101, 599	87, 684	67, 271	46, 887	36, 452	26, 970	22, 879	19, 755	27, 008	50, 436
1926	59, 850	55, 705	51, 498	43, 528	32, 372	26, 649	23, 907	23, 509	21, 311	25, 267	38, 079	59, 603

Cold Storage Report Section.

TABLE 372.—*Beef, cured and in process of cure: Stocks in cold-storage warehouses and meat-packing establishments, United States, 1916–1926*

[Thousand pounds—i. e., 000 omitted]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
Average:												
1916–1920	34, 261	33, 612	34, 088	31, 251	27, 730	25, 340	26, 432	26, 723	27, 392	27, 707	29, 904	33, 332
1921–1925	22, 971	23, 202	23, 888	24, 414	23, 826	23, 170	21, 827	20, 399	20, 147	18, 997	19, 173	21, 705
1916	21, 443	20, 852	26, 959	25, 811	21, 869	17, 324	18, 915	18, 589	18, 450	21, 653	30, 013	37, 958
1917	37, 301	35, 891	37, 660	30, 601	29, 409	30, 831	35, 679	32, 401	30, 290	31, 246	32, 223	38, 325
1918	39, 243	38, 793	37, 575	34, 106	29, 217	24, 804	21, 968	28, 065	29, 981	28, 713	29, 339	32, 381
1919	36, 267	35, 810	31, 246	30, 689	27, 822	27, 089	29, 244	30, 943	35, 526	37, 328	37, 595	35, 547
1920	37, 052	36, 715	37, 002	35, 047	30, 333	26, 653	26, 355	23, 617	22, 711	19, 594	20, 352	22, 448
1921	22, 567	22, 926	24, 006	24, 282	21, 516	20, 716	19, 697	17, 829	17, 130	15, 526	14, 472	17, 144
1922	16, 313	16, 774	17, 997	18, 744	19, 166	19, 304	19, 113	19, 304	20, 081	18, 961	19, 884	22, 602
1923	24, 450	24, 841	24, 987	25, 210	24, 013	23, 816	22, 835	21, 781	21, 416	20, 597	19, 649	22, 142
1924	22, 593	22, 711	23, 238	25, 199	25, 482	24, 285	22, 390	20, 377	19, 771	18, 939	21, 387	23, 508
1925	28, 930	28, 758	29, 210	28, 634	28, 952	27, 731	25, 102	22, 7[illegible]	22, 335	20, 964	20, 473	23, 128
1926	25, 146	24, 833	26, 192	27, 253	27, 606	25, 930	24, 091	22, 539	20, 386	20, 983	23, 119	26, 374

Cold Storage Report Section.

TABLE 373.—*Dairy breeds: Number of purebred cattle registered, leading breeds, United States, 1900–1926*

Year	Ayrshire			Guernsey			Holstein-Friesian			Jersey		
	Bulls	Cows	Total	Bulls	Cows	Total	Bulls	Cows	Total	Bulls	Cows	Total
1900				608	896	1, 504	1, 365	3, 381	4, 746	2, 798	8, 750	11, 548
1901				647	1, 172	1, 819	1, 460	3, 648	5, 108	2, 567	8, 045	10, 612
1902				726	1, 267	1, 993	1, 738	4, 252	5, 990	2, 471	7, 580	10, 051
1903				746	1, 289	2, 035	2, 088	4, 753	6, 841	2, 370	7, 240	9, 610
1904				737	1, 261	1, 998	2, 477	5, 567	8, 044	2, 373	7, 464	9, 837
1905				847	1, 612	2, 459	3, 226	6, 547	9, 773	2, 640	7, 735	10, 375
1906				950	1, 964	2, 914	3, 842	7, 918	11, 760	3, 019	8, 652	11, 671
1907				1, 118	1, 966	3, 084	4, 841	9, 809	14, 650	3, 752	9, 383	13, 135
1908				1, 291	2, 191	3, 482	5, 684	10, 850	16, 534	4, 148	10, 135	14, 283
1909				1, 841	3, 836	5, 677	7, 021	12, 570	19, 591	5, 249	12, 513	17, 762
1910			3, 233	2, 420	4, 194	6, 614	9, 689	16, 487	26, 176	6, 333	14, 509	20, 842
1911			4, 798	2, 402	4, 001	6, 403	12, 472	20, 417	32, 889	7, 229	16, 282	23, 511
1912			2, 884	2, 942	4, 578	7, 520	13, 743	23, 792	37, 535	7, 562	16, 591	24, 153
1913			3, 950	3, 653	5, 642	9, 295	16, 364	26, 951	43, 315	9, 147	19, 481	28, 628
1914			4, 912	4, 348	6. 937	11, 285	18, 336	29, 750	48, 086	10, 079	22, 861	32, 940
1915			4, 439	4, 765	6, 535	11, 300	25, 617	42, 063	67, 680	9, 475	22, 957	32, 432
1916			4, 033	5, 030	7, 654	12, 684	26, 116	46, 549	72. 665	10, 242	24, 997	35, 239
1917			4, 944	6, 167	9, 366	15, 533	24, 749	49, 098	73, 847	14, 446	33, 960	48, 406
1918			8, 494	6, 108	9, 356	15, 464	28, 730	59, 549	88, 279	8, 904	25, 398	34, 302
1919			6, 148	7, 648	11, 781	19, 429	30, 298	60, 589	90, 887	10, 906	30, 424	41, 330
1920			6, 809	7, 427	11, 956	19, 383	36, 791	77, 712	114, 503	11, 669	32, 162	43, 831
1921			5, 874	8, 036	13, 971	22, 007	39, 585	88, 265	127, 850	11, 213	31, 123	42, 336
1922	1, 565	4, 816	6, 381	8, 065	14, 007	22, 072	30, 631	83, 141	113, 772	11, 651	33, 801	45, 452
1923	1, 578	5, 975	7, 563	9, 758	16, 976	26, 734	29, 089	86, 043	115, 132	12, 291	38, 159	50, 450
1924	1, 431	5, 508	6, 939	10, 301	18, 166	28, 467	28, 209	83, 320	111, 529	12, 331	39, 832	52, 163
1925	1, 561	5, 972	7, 533	11, 299	20, 742	32, 041	26, 935	82, 659	109, 594	12, 131	41, 725	53, 856
1926	1, 720	6, 142	7, 862	12, 392	22, 298	34, 690	28, 117	82, 971	111, 088	12, 837	42, 915	55, 752

Division of Dairy and Poultry Products.

TABLE 374.—*Cattle, calves, beef and veal: Statement of the livestock and meat situation, by months, 1926*

Item	Unit	January	February	March	April	May	June	July	August	September	October	November	December	Total or average
Inspected slaughter:														
Cattle	Thousands	819	695	785	765	788	852	864	811	971	996	947	887	10, 180
Calves	do	410	378	464	462	455	480	426	379	408	446	435	410	5, 153
Carcasses condemned:														
Cattle	do	8	9	12	9	7	6	6	6	8	9	10	8	98
Calves	do	1	1	2	1	1	1	1	(1)	1	1	1	1	12
Average live weight:														
Cattle	Pounds	967	971	973	975	966	966	959	959	957	954	955	973	964
Calves	do	174	168	158	154	161	169	185	195	201	195	186	176	176
Average dressed weight:														
Cattle	do	512	523	527	539	531	530	522	520	512	503	497	515	518
Calves	do	106	98	92	92	94	99	108	113	117	112	108	104	104
Total dressed weight (carcass, not including condemned):														
Beef	1,000 pounds	415, 245	358, 550	407, 536	407, 640	415, 020	448, 386	447, 515	418, 926	493, 128	496, 050	465, 632	452, 281	5, 225, 909
Veal	do	43, 131	36, 812	42, 523	42, 502	42, 555	47, 539	45, 943	42, 735	47, 817	49, 938	46, 725	42, 384	530, 604
Storage first of month:														
Fresh beef	do	59, 850	55, 705	51, 498	43, 528	32, 372	26, 649	23, 997	23, 509	21, 311	25, 267	38, 079	59, 603	38, 447
Cured beef	do	25, 146	24, 833	26, 192	27, 253	27, 606	25, 930	24, 691	22, 539	20, 386	20, 983	23, 119	26, 374	24, 588
Exports: [2]														
Fresh beef and veal	do	240	243	197	384	145	145	259	200	166	186	207	193	2, 565
Cured beef	do	1, 365	1, 497	1, 443	1, 521	1, 188	1, 731	1, 942	1, 783	2, 478	1, 639	1, 819	1, 247	19, 653
Canned beef	do	156	348	274	277	172	149	287	199	189	172	165	257	2, 645
Oleo oil and stearin	do	6, 797	6, 283	11, 217	9, 951	10, 246	10, 511	7, 590	7, 272	9, 955	8, 855	8, 047	7, 495	104, 219
Tallow	do	572	585	556	392	1, 034	1, 416	551	1, 254	1, 122	739	1, 196	1, 011	10, 628
Imports, fresh beef and veal	do	1, 576	1. 494	1, 143	1. 675	1, 686	1, 251	1, 410	2, 087	2, 726	2, 312	1, 335	1, 411	20, 106
Average cost for slaughter per 100 pounds:														
Cattle	Dollars	7. 17	7. 39	7. 67	7. 73	7. 69	7. 83	7. 49	7. 26	7. 27	6. 84	6. 65	7. 14	7. 32
Calves	do	9. 93	10. 29	10. 60	9. 30	10. 40	9. 98	9. 80	10. 37	9. 91	9. 27	8. 88	9. 49	9. 82

Division of Statistical and Historical Research. Inspected slaughter from reports of Bureau of Animal Industry. Weights and storage holdings from reports of the Cold Storage Report Section; exports and imports from Bureau of Foreign and Domestic Commerce.

[1] Not over 500.
[2] Including reexports.

DAIRY PRODUCTS

TABLE 375.—*Milk: Production and utilization, United States, 1921–1925*

Purpose for which milk is used	Milk used per pound of product	1921			1922			1923			1924			1925		
		Product manufactured	Whole milk used	Per cent of total milk	Product manufactured	Whole milk used	Per cent of total milk	Product manufactured	Whole milk used	Per cent of total milk	Product manufactured	Whole milk used	Per cent of total milk	Product manufactured	Whole milk used	Per cent of total milk
	Pounds	*Million pounds*	*Million pounds*	*Per cent*	*Million pounds*	*Million pounds*	*Per cent*	*Million pounds*	*Million pounds*	*Per cent*	*Million pounds*	*Million pounds*	*Per cent*	*Million pounds*	*Million pounds*	*Per cent*
Butter:																
Creamery	21.0	1,054.9	22,153.7	22.408	1,153.5	24,223.8	23.619	1,252.2	26,296.5	23.963	1,356.1	28,577.7	24.923	1,361	28,592.1	24.541
Farm	21.0	650.0	13,650 0	13.807	625.0	13,125.0	12.797	610.0	12,810.0	11.673	600.0	12,600.0	10.988	590	12,390.0	10.635
Cheese, all kinds	10.0	355.8	3,558.4	3.599	375.0	3,749.8	3.656	398.9	3,989.5	3.636	417.9	4,179.4	3.645	447	4,475.2	3.841
Milk:																
Condensed and evaporated	2.5	1,464.2	3,660.4	3.703	1,431.3	3,578.4	3.489	1,774.9	4,437.2	4.044	1,700.5	4,251.4	3.708	1,757	4,394.7	3.772
Powdered	8.0	4.2	33 9	.034	5.6	44.8	.044	6.6	52.5	.048	7.9	63.1	.055	8	71.4	.061
Malted	2.2	15.7	34.4	.035	13.7	30.0	.029	15.3	33.7	.031	15.9	34.9	.031	----	6.4	.006
Sterilized, canned	1.0	5.1	5.1	.005	.3	.3	----	.1	.1	----	.5	.5	----	18	39.7	.034
Chocolate	----	----	40.0	.041	----	100.0	.098	----	149.5	.136	----	158.8	.138	1	1.6	.002
Cream, powdered	19 0	.1	2.5	.002	.1	2 2	.002	.3	6.2	.006	1.0	19.3	.017	----	228.8	.196
Ice cream	[1] 13.75	[2] 244.0	3,355.0	3.396	[2] 263.5	3,623.4	3.533	[2] 294 9	4,054.9	3.695	[2] 285.6	3,926.3	3.424	322	4,437.5	3.809
Total milk for manufacture	----	----	46,493.4	47.030	----	48,477.7	47.267	----	51,830.1	47.232	----	53,811.4	46.929	----	54,637.4	46.897
Milk accounted for otherwise.																
Household purposes	----	----	45,143.0	45.660	----	46,672 6	45.507	----	50,440.0	45.965	----	52,772.0	46.022	----	54,325.8	46.629
Fed to calves	----	----	4,260.0	4.310	----	4,335.0	4.226	----	4,174.0	3.803	----	4,642.8	4.049	----	4,047.1	3.474
Waste, loss, and unspecified	----	----	2,965 9	3.000	----	3,076.9	3.000	----	3,292.0	3.000	----	3,440.0	3.000	----	3,495.1	3.000
Total milk produced	----	----	98,862.3	100.000	----	102,562 2	100.000	----	109,736.1	100.000	----	114,666.2	100.000	----	116,505.4	100.000

Division of Dairy and Poultry Products.

[1] Milk per gallon of ice cream

[2] Million gallons.

TABLE 376.—*Dairy products: Quantity produced, 1921–1925*

[Thousands of pounds—i. e., 000 omitted]

Product	1921	1922	1923	1924	1925												
					Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Creamery butter	1, 054, 938	1, 153, 515	1, 252, 214	1, 356, 080	1, 361, 526	87, 121	80, 218	92, 302	107, 023	145, 478	164, 253	158, 920	136, 738	106, 325	104, 520	85, 492	91, 136
Whey butter (made from whey cream)	2, 176	2, 291	1, 904	1, 665	1, 774	92	90	110	142	223	326	184	166	146	126	89	80
Renovated or process butter	5, 877	4, 448	2, 802	2, 813	2, 519	246	197	210	207	241	286	221	200	200	178	136	197
Butter oil	----------	----------	----------	1, 130	837	11	7	7	71	71	80	81	124	106	120	82	77
American cheese:																	
Whole milk	261, 727	282, 806	308, 108	324, 695	347, 240	16, 834	17, 991	21, 598	26, 889	38, 012	45, 782	43, 706	37, 659	31, 548	28, 253	20, 349	18, 619
Part skim	1, 455	2, 164	2, 145	2, 470	2, 793	208	180	281	243	328	366	333	284	179	108	110	173
Full skim	1, 733	2, 500	2, 033	1, 605	3, 298	106	101	167	603	745	796	202	99	88	129	105	157
Swiss cheese (including block)	22, 678	19, 983	24, 355	21, 844	23, 457	184	174	219	503	2, 460	3, 868	4, 240	4, 110	3, 170	2, 592	1, 332	605
Brick and Munster cheese	42, 073	37, 194	33, 250	32, 052	34, 101	1, 686	1, 504	2, 335	4, 018	4, 817	4, 239	2, 716	2, 467	2, 142	2, 774	2, 808	2, 595
Limburger cheese	7, 035	7, 383	7, 100	9, 734	9. 163	312	283	421	677	977	1, 033	1, 297	1, 054	1, 008	908	698	495
Cream and Neufchatel cheese	9, 279	9, 936	10, 334	14, 945	17, 575	1, 792	1, 758	2, 095	1, 598	1, 396	1, 367	1, 168	1, 113	1, 077	1, 315	1, 445	1, 451
All Italian varieties of cheese	3, 793	2, 627	2, 132	1, 973	1, 562	125	118	131	170	169	168	122	110	106	123	104	116
All other varieties of cheese	6, 065	5, 387	5, 040	4, 622	4, 325	410	405	429	335	368	337	301	308	291	401	385	355
Total cheese (not including cottage, pot, and baker's)	355, 838	369, 980	394, 697	413, 940	443, 514	21, 657	22, 514	27, 676	35. 036	49, 272	57, 956	54, 085	47, 204	39, 609	36, 603	27, 336	24, 566
Cottage, pot, and baker's cheese	27, 316	32, 389	35, 527	54, 347	59, 485	4, 520	4, 832	5, 721	5, 501	6, 290	6, 224	4, 576	4, 088	4, 117	4, 672	4, 221	4, 723
Condensed milk (sweetened):																	
Case goods—																	
Skimmed	3, 861	3, 915	2, 748	2. 044	3, 135	------	111	267	563	658	884	112	100	71	169	91	109
Unskimmed	199, 985	230, 456	196, 058	187, 281	186, 807	12, 801	12, 508	16, 442	19, 415	25, 903	21, 138	20, 357	12, 381	9, 744	12, 753	11, 337	12, 028
Bulk goods—																	
Skimmed	66, 051	76, 049	102, 236	96, 581	114, 198	6, 331	6, 493	9, 113	9. 538	14, 661	14, 721	12, 051	8, 997	6, 452	8, 849	7, 520	9, 472
Unskimmed	22, 324	30, 292	44, 860	47, 429	44, 758	3, 569	2, 543	3, 224	4, 152	8, 476	6, 329	2, 928	3, 132	2, 445	3, 224	2, 003	2, 733
Evaporated milk (unsweetened):																	
Case goods—																	
Skimmed	1, 405	3, 574	7, 035	11, 555	5, 994	------	------	------	1, 233	1, 615	2, 040	79	80	111	347	282	207
Unskimmed	1, 028, 172	949, 909	1, 252, 520	1, 189, 755	1, 202, 456	77, 871	76, 386	94, 663	111, 340	139, 937	142, 893	130, 787	109, 511	89, 878	89, 939	64, 870	74, 381
Bulk goods—																	
Skimmed	69, 220	67, 066	77, 416	83, 131	86, 954	4, 329	4, 899	6, 068	7, 736	9, 989	13, 304	10, 106	8, 693	7, 372	4, 987	4, 881	4, 590
Unskimmed	73, 145	70, 088	92. 008	82, 772	113, 556	5, 101	5, 508	7, 110	9, 040	11, 923	16, 791	14, 818	12, 542	10, 479	7, 393	6, 078	6, 778
Total condensed and evaporated milk	1, 464, 163	1, 431, 349	1. 774, 881	1, 700, 548	1, 757, 858	110, 002	108, 448	136, 887	163, 017	213, 162	218, 100	191, 238	155, 436	126, 552	127, 661	97, 057	110, 298

Sterilized milk (canned same as condensed)	5, 074	330	80	488	1, 576	1	1	1	155	150	330	246	107	189	117	143	138
Condensed or evaporated buttermilk	29, 314	44, 343	54, 833	66, 837	77, 079	4, 225	3, 702	4, 071	5, 070	7, 671	8, 979	9, 224	8, 792	6, 518	7, 233	5, 781	5, 813
Dried or powdered buttermilk	7, 708	9, 007	13, 032	18, 058	20, 246	1, 494	1, 379	1, 526	1, 896	2, 246	2, 281	2, 072	1, 807	1, 755	1, 188	1, 110	1, 492
Powdered whole milk	4, 242	5, 599	6, 560	7, 887	8, 931	521	536	633	595	1, 256	1, 172	1, 356	1, 019	510	447	396	490
Powdered skimmed milk	38, 546	40, 617	62, 251	69, 219	73, 317	3, 757	3, 800	5, 330	7, 888	9, 985	9, 759	7, 405	6, 146	5, 261	5, 161	4, 247	4, 578
Powdered cream	130	118	328	1, 018	339	10	26	29	1	22	129	115	6	------	------	------	1
Dried casein (skim-milk product)	8, 066	6, 907	14, 500	20, 683	16, 468	1, 462	1, 731	1, 773	1, 660	1, 794	1, 766	1, 641	1, 245	988	1, 062	603	743
Dried casein (buttermilk product)	10	20	48	76	192	------	------	6	5	33	59	37	32	17	3	------	------
Malted milk	15, 652	13, 659	15, 331	15, 889	18, 050	1, 581	1, 514	1, 794	1, 743	1, 628	1, 727	1, 553	1, 340	1, 228	1, 283	1, 245	1, 414
Milk sugar (crude)	2, 890	2, 191	2, 872	3, 331	5, 655	234	242	295	690	789	1, 054	824	577	365	225	161	199
Ice cream of all kinds (gallons)	147, 949	161, 609	183, 412	181, 564	214, 382	6, 932	8, 562	11, 605	17, 457	22, 380	34, 647	33, 179	29, 785	23, 081	10, 407	8, 586	7, 761
Ice cream mix or stock	------	------	------	41, 912	68, 051	2, 227	3, 236	4, 193	5, 954	6, 957	11, 937	10, 037	8, 670	6, 997	2, 916	2, 618	2, 309

Division of Dairy and Poultry Products.

Table 377.—*Condensed milk: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Average, 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Australia	4,463	727	[1] 70	[1] 12,726	[1] 67	[1] 25,552	[2] 240	[2] 29,165
Canada	259	4,575	177	41,056	155	40,251	119	40,614
Denmark	[2,3] 5	[3] 4,724	4	66,969	[2] 34	70,806	56	58,762
Irish Free State	—	—	—	—	2,368	2,705	2,442	6,569
Italy	806	5,913	987	6,791	855	13,559	771	17,324
Lithuania	—	—	[2] 4	[2] 1,017	24	[2] 946	[2] 1	1,958
Netherlands	[2] 23	55	163	227,393	236	233,901	291	248,674
New Zealand	261	132	3	1,443	31	1,408	93	1,144
Norway	3	32,106	989	16,069	685	13,311	1,178	16,848
Switzerland	201	80,539	177	55,827	120	58,225	68	67,555
United States	—	[3] 16,200	10,398	194,264	6,452	206,280	6,964	147,703
PRINCIPAL IMPORTING COUNTRIES								
Algeria	[2] 143	[2] 38	[2] 450	[2] 19	2,759	45	3,047	66
Argentina	742	—	1,016	133	946	18	1,187	5
Austria	—	—	[2] 17,978	[2] 317	4,340	507	1,154	27
Austria-Hungary	[2] 323	[2] 79	—	—	—	—	—	—
Belgium	([4])	([4])	668	104	[2] 533	[2] 158	3,878	390
Brazil	8,694	—	645	[2] 18	1,426	[2] 8	761	([2,5])
British India	11,236	—	7,083	217	10,029	862	[6] 14,124	—
China	4,484	—	9,443	—	9,461	—	10,117	—
Cuba	28,457	—	46,300	—	47,312	—	—	—
Czechoslovakia	—	—	[2] 2,324	[2] 131	[2] 2,141	[2] 665	705	[2] 1,136
Dutch East Indies	[7] 13,049	89	[2] 22,087	—	[8] 10,926	—	[8] 8,364	[8] 54
Egypt	[9] 1,628	—	1,546	125	1,740	160	1,173	253
France	2,458	4,140	25,134	7,483	20,168	4,916	19,991	6,001
French Indo-China [2]	2,437	72	4,158	147	5,006	164	4,973	199
Germany [10]	66	12,080	8,872	582	26,753	570	28,392	1,428
Greece [2]	176	—	5,368	[2] 7	4,858	[2] 1	—	—
Jamaica [2]	2,860	—	3,667	—	3,427	—	3,387	—
Japan	10,061	—	12,623	61	12,642	74	9,090	284
Peru	[2,3] 2,035	—	[2] 7,221	—	7,097	—	9,339	—
Philippine Islands	12,311	—	16,855	—	17,890	—	22,533	—
Poland	—	—	[2] 1,711	[2] 1	2,072	31	442	128
Siam	—	—	[2] 2,429	—	[2] 4,283	—	4,833	—
Trinidad and Tobago	[2] 37	—	[2] 2,365	[2] 261	[2] 2,146	[2] 101	2,383	[2] 136
Tunis	[2,3] 1,334	—	[2] 1,835	—	1,950	—	1,844	—
Union of South Africa	21,227	([5])	10,697	1	10,029	1	14,497	16
United Kingdom	121,175	48,221	251,982	13,966	245,436	11,113	250,572	14,497
Other countries	22,365	6,523	25,526	857	23,307	1,282	18,054	200
Total	273,319	216,213	502,954	647,985	489,654	687,115	447,118	661,198

Division of Statistical and Historical Research. Official sources, except where otherwise noted.

[1] Year beginning July 1.
[2] International Yearbook of Agricultural Statistics.
[3] Four year average.
[4] Not separately stated.
[5] Less than 500 pounds.
[6] Sea trade only.
[7] Three year average.
[8] Java and Madura only.
[9] One year only.
[10] Includes some powdered milk.

TABLE 378.—*Milk, standard or grade B: Retail price per quart, delivered to family trade in cities, 1920–1926*

Market and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Boston:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1920	17	17	17	17	16	16	17	17½	18	18	18	18
1921	17	16½	16	15½	15	15	15	16	15½	15	15	15
1922	13½	13½	13½	13½	12½	12½	13½	13½	13½	14½	14½	14½
1923	14½	14½	14½	13½	13½	13½	14	14½	14½	14½	15½	15
1924	14½	13½	12½	12	12	12	12½	13½	14½	14½	14½	14½
1925	14½	14½	13½	13½	13½	13	14	14½	14½	14½	14½	14½
1926	14½	14½	14½	14½	14½	13½	14½	14½	14½	14½	14½	15
New York:												
1920	18	16½	16½	15	15	15	16	17	18	18	18	17
1921	17	16	15	------	------	14	14	15	15	15	15	15
1922	15	15	15	------	13	13	14	15	15	15	15	16
1923	16	15	15	15	14	14	14	14	15	15	16	15
1924	15	14	14	14	13	13	13	13	14	14	15	15
1925	15	15	15	15	15	14	14	15	15	15	15	15
1926	15	15	15	15	15	15	15	15	15	15	15	15
Philadelphia:												
1920	14	14	14	14	14	14	14	15	15	15	15	18
1921	13	13	13	13	11	11	11	11	11	11	11	11
1922	11	11	11	11	11	11	11	11	11	12	12	12
1923	11½	12	12	12	13	13	13	13	13	13	12	12
1924	12	12	12	12	12	12	12	12	12	12	12	12
1925	12	12	12	12	12	12	12	12	12	12	12	12
1926	12	12	12	12	12	12	12	12	12	13	13	13
Pittsburgh:												
1920	16	16	16	15	15	15	15	16	16	16	16	16
1921	15	15	14	14	14	14	14	------	14	14	14	13
1922	13	12	12	12	12	12	12	12	------	------	14	14
1923	------	------	14	14	14	14	14	14	14	15	15	15
1924	15	14	14	14	14	14	14	14	14	14	14	14
1925	14	14	14	14	14	14	14	14	14	14½	14½	14½
1926	14½	14½	14½	14	13	13	13	14	14	14	14½	15
Cleveland:												
1920	16	16	16	15	15	15	15	16	16	16	15	15
1921	15	14	14	14	14	13	13	13	13	13	13	13
1922	11	11	11	10	10½	10½	10½	11	11	13	13	14
1923	14	14	14	14	13½	13	14	14	14	13½	14	13½
1924	13½	14	13½	13½	14	12	11	14	13½	13½	13½	13½
1925	13½	13½	14	14	14	14	13½	14	14	14	14	15
1926	15	15	13½	14	14	14	14	14	14	14½	14½	14½
Indianapolis:												
1920	14	14	14	14	14	14	14	14	14	14	14	14
1921	14	14	13	13	13	12	------	12	12	12	11½	11
1922	11½	11	11	10½	10½	10	10	10	10	------	10	10
1923	10	12	12	12	12	12	------	12	------	12	12	12
1924	12	12	12	12	12	12	12	12	12	11	12	12
1925	12	11	10	10	10	10	10	11	12	12	12	12
1926	12	12	12	12	12	12	12	12	12	12	12	12
Chicago:												
1920	15	15	14	14	14	14	15	16	16	16	15	14
1921	14	14	14	14	14	14	14	14	12	12	12	12
1922	12	12	12	12	12	12	12	12	12	12	12	12
1923	12½	13	13	13	13	13	14	14	14	14	14	14
1924	14	14	14	14	14	14	14	14	14	14	14	14
1925	14	14	14	14	14	14	14	14	14	14	14	14
1926	14	14	14	14	14	14	14	14	14	14	14	14
Detroit:												
1920	16	16	16	16	15½	15½	16	16	16	16	16	14
1921	13	13	13	13	13	13	13	13	13	13	13	13
1922	13	13	12	11½	11½	11½	12	13	13	13	13	14
1923	13½	13½	14	14	14	14	12	15	13½	15	14	13½
1924	14	14	14	14	14	13½	14	13½	13½	13½	13½	13½
1925	13½	13	13½	13	13½	13½	13½	15	14	13½	13½	14
1926	14	14	14	14	14	14	14	14	14	14	14	14
Milwaukee:												
1920	13	13	12	12	12	12	13	13	13	13	11	11
1921	------	10	10	10	9	9	9	10	9	9	9	9
1922	9	9	9	9	9	9	9	9	9	9	10	10
1923	10	10	10	10	10	10	10	11	11	11	11	11
1924	11	11	11	11	11	11	11	11	11	10½	10	10
1925	10	10	10	10	10	10	10	10	10	10	10	10½
1926	10	10	10	11	11	11	11	11	11	11	11	11
Minneapolis:												
1920	13	13	13	13	13	13	13	14	14	14	14	14
1921	13	12½	12	12	11	10	10	11	11	11	11	10½
1922	10	10	10	10	10	10	10	10	11	11	11	11½
1923	11	11	11	11	11	11	11	12	12	12	12	12
1924	12	12	12	10	10	10	10	11½	11	11	11	11
1925	11	11	11	11	11	11	11	11	12	12	12	12
1926	12	11	11	11	11	11	11	11	11	11	11	11

Table 378.—*Milk, standard or grade B: Retail price per quart, delivered to family trade in cities, 1920–1926*—Continued

Market and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
St. Louis:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1920	16	16	16	15	15	15	15	16	16	16	16½	16
1921	16	15	14	14	14	13	13	13	13	13	13	10
1922	10	10	10	10	10	10	12	12	12	12	12	13
1923	13	13	13	13	13	13	13	13	13	13	13	13
1924	13	13	13	13	13	13	13	13	13	13	13	13
1925	13	13	13	13	13	13	13	13	13	13	13	13
1926	13	13	13	13	13	13	13	13	13	13	13	13
Kansas City, Mo.:												
1920	15½	15½	16	16	15½	15½	15	15½	15	15½	15½	15½
1921	14½	14	13½	13½	13½	13	14	14	14	14	14	14
1922	14	13	12	11	11	11½	11½	12	10	12	12	12½
1923	13	13	13	13	------	13	13	13	13	13	13	13
1924	12	13	13	13	------	13	13	13	13	13	13	13
1925	13	13	13	13	13	13	13	13	13	13	13	13
1926	13	13	13	13	13	13	13	13	13	13	13	13
Washington, D. C.:												
1920	18	17½	17½	17½	16	16	16	16	16½	17½	17½	17½
1921	16½	15	16	16	13	13½	13½	13½	14	15	15	15
1922	13½	13	13	13½	13	13	13	13	13	14	14	14
1923	14	14	14	14	14	14	14	14	14	14	15	15
1924	15	15	15	15	14	14	14	14	14	14	14	14
1925	14	14	14	14	14	14	14	14	14	15	15	15
1926	15	15	15	15	14	14	14	14	14	15	15	15
Jacksonville:												
1920	20	20	20	20	20	20	25	25	25	24	22½	22½
1921	------	18	18	------	------	20	------	19	20	20	18½	18½
1922	17½	------	17	14	14	14	16½	15½	17	16½	17	17
1923	17½	17½	18½	16	15½	15½	16½	16	17	18½	18	17½
1924	19	20	------	17½	16½	17	17	17	18½	18½	18½	18½
1925	18½	18½	18½	19	18½	18	17½	17½	18½	20½	20½	20½
1926	20	20½	20½	20½	20½	19½	19½	19½	20½	20½	20½	20½
Louisville:												
1920	16	------	16	16	16	16	16	16	16	16	16	------
1921	15	20	------	------	------	------	11	12	11	11	11	11
1922	11	9	9	9	9	9	9	10	11	11½	12	13
1923	13	12	12	12	12	12	12	12½	12½	13	13	13
1924	13	13	13	13	12	12	12	12	12	12	13	13
1925	13	13	12	12	12	12	12	12	12	14	14	14
1926	14	13	12	12	12½	12	12	12	12	12	13	13
Birmingham:												
1920	21½	20	20	20	23	20	20	22½	22½	20	20	22½
1921	22½	22½	------	20	------	18	20	17½	17½	17½	17½	17½
1922	20	18	------	17½	15	16	------	17½	------	------	16	------
1923	17	16	17	16	16	16	16	16	16	16	15	15
1924	15	17	17	17	17	16	17	16½	16½	18	18	18
1925	18	18	18	18	------	18	18	18	18	18	------	17½
1926	18	------	17½	18	18	18	18	18	18	18	18	18
New Orleans:												
1920	19	19	19	19	17	17	17	17	19	19	19	18
1921	17	17	16	16	16	16	16	16	16	16	14	14
1922	14	14	14	14	14	14	14	14	------	14	14	14
1923	14	------	14	14	14	14	14	14	14	15	15	------
1924	------	15	15	15	14	14	14	14	14	14	14	14
1925	14	14	14	14	12	12	12	12	12	14	14	14
1926	14	14	14	14	14	14	14	14	14	14	14	14
Dallas:												
1920	------	23	23	21	21	21	21	21	21	21	21	21
1921	------	19	17	------	15	------	15	------	15	------	------	15
1922	15	15	12	12	12	12	15	15	15	15	15	15
1923	15	15	15	15	15	15	15	15	------	------	15	15
1924	15	15	15	15	15	15	15	15	15	15	15	15
1925	15	15	15	15	15	15	15	15	15	15	15	15
1926	15	15	14½	12	12½	12½	11½	12	12	12	12	13
Butte:												
1920	15	15	15	------	15	15	15	15	------	15	15	15
1921	15	15	15	------	13	------	12½	12½	12½	13	13	12½
1922	12½	13	12½	12	12½	11½	11½	12	12	12	13	12½
1923	12	12½	13	12½	12½	12	12½	12½	13½	13	13	14
1924	------	13	13½	13	13½	13½	13½	13½	13½	13	13	13½
1925	12½	14	13½	13½	13½	13	14	14	13	13½	13½	13
1926	13	13	13½	13	13½	13	------	13	13	13½	13	13
Denver:												
1920	12½	12½	13	13	------	13	13	13	13	13	13	13
1921	13	13	13	12	11	11	11	11	10	10	10	10½
1922	10	10	9½	10	10	9½	10	10	9½	10	10	12
1923	12	12	12	12	12	12	12	12	12	12	12	12
1924	12	12	12	12	12	11	12	12	12	12	12	12
1925	12	12	10	10	10	10	10	12	12	12	12	12
1926	12	12	12	12	------	12	12	12	12	12	12	12

TABLE 378.—*Milk, standard or grade B: Retail price per quart, delivered to family trade in cities, 1920–1926*—Continued

Market and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Salt Lake City:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1920	12½	12½	12½	12½	12½	12½	13	12½	12½	12½	12½	12½
1921	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½	12½
1922	10	8½	9	9	8½	8½	8½	8½		9	8½	9
1923	10½	10	10		10			10½	9½	10	10	10
1924	9½	9½	9½	9½	9½	9½	9½		9½	11	10½	10½
1925	10½	10½	10½	11	11	10½	10½	11	10½	10½	10½	10½
1926	10½	10½	10½	9½	9½	9½	10½	10½	10½	11½	10½	10½
Seattle:												
1920	14	14½	13½	12		13	14	14	14	14		13
1921	13	11	13	13	12			12		12	12	11
1922	13	13	13	12	12	12	12	13	13	12½	13	13
1923	13	13	13	13	12	12	12	12	13	13	13	11
1924		13		12	11	11	11	11	11	9	9	10
1925	10	12	12	12	12	12	12	12	13	13	13	13
1926	12	13	13			13	13	13	13		11	
Portland, Oreg.:												
1920	15	15	15	13	13½	13	13	[illegible]	14	14	14½	14½
1921	14	14	14		13	12	12	12½	12½	12½	12	12
1922	12	11	11		11	11	11	12	12	12	12	12
1923	12½	12	12½	12	12	12	13	12	12	12½	12	12
1924	12	11½	11	11	11	11		12	11½	11	11	10½
1925	11	11	11	11	11	11½	11	11½	11½	12	12	12
1926	12	12	12	12½	12	12	12	12	12	11½	12	12½
Los Angeles:												
1920	16	16	16	16	16	16	18	18	18	18	18	18
1921	18	16	16	16		16	15	14	14	14	14	14
1922	14½	14	14	14	14	14	14	14	14	14	15	15
1923	15	15	15	15	15	15	15	15	15	15	15	15
1924	15	15		16	15	15	17	15	17	17	14	14½
1925	14	14½	15	15	15	15	15	15	15	15	15	15
1926	15	15	15	15	15	15	15	15	15	15	15	15
San Francisco:												
1920	16	16	15½	15	16	16	15½	17	17	17	17	17
1921	15½	15½	15	15	15	14½	13½	14	14	13½	13½	13½
1922	13½	12½	12½	12½		12½	12½	12½	12½	12½	12½	13
1923	12½	12½	12½	12½	12½	12½		12½			14	14
1924	14	14	14	14	14	14	14	14	14	14	14	14
1925	14	14	14	14	14	14	14	14	14	14	14	14
1926	14	14	14	14	14	14	14	14	14	14	14	14

Division of Statistical and Historical Research. Compiled from reports of the Division of Dairy and Poultry Products.

TABLE 379.—*Creamery butter: Production, United States, 1917–1925*

[Thousand pounds—i. e., 000 omitted]

Year	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.	Total
1917	43, 997	38, 459	47, 371	53, 809	75, 108	98, 898	94, 151	83, 936	76, 744	56, 176	42, 705	48, 157	759, 511
1918	44, 357	42, 389	49, 066	57, 332	85, 564	104, 385	97, 440	85, 148	72, 397	63, 886	45, 741	45, 560	793, 285
1919	52, 189	44, 343	54, 822	67, 487	103, 941	119, 357	104, 156	84, 458	68, 815	58, 723	45, 041	46, 662	849, 994
1920	49, 044	46, 355	56, 303	60, 622	86, 845	114, 695	110, 844	90, 669	77, 106	65, 129	53, 570	52, 395	863, 577
1921	58, 906	56, 556	67, 677	82, 763	119, 077	130, 633	111, 898	111, 638	89, 932	84, 374	70, 024	71, 460	1, 054, 938
1922	73, 505	67, 405	79, 532	86, 623	132, 351	150, 034	135, 231	114, 160	92, 359	83, 070	68, 628	70, 617	1, 153, 551
1923	83, 688	74, 134	88, 311	100, 547	134, 350	158, 371	148, 278	120, 802	102, 273	89, 297	74, 909	77, 254	1, 256, 522
1924	87, 468	86, 731	95, 760	106, 012	139, 954	161, 992	164, 443	137, 836	115, 102	100, 536	77, 282	82, 964	1, 308, 014
1925	87, 121	80, 218	92, 302	107, 023	145, 478	164, 253	158, 920	136, 738	108, 325	104, 520	85, 492	91, 136	1, 361, 526

Division of Dairy and Poultry Products.

TABLE 380.—*Creamery butter production in factories in the United States, by States, 1918–1925*

[Thousand pounds—i. e., 000 omitted]

State	1918	1919	1920	1921	1922	1923	1924	1925
Alabama	912	696	308	742	917	831	839	1, 086
Arizona	1, 416	1, 000	828	1, 358	623	600	2, 107	1, 034
Arkansas	427	363	345	586	731	996	1, 259	1, 174
California	58, 293	61, 795	61, 870	68, 810	69, 941	81, 943	75, 509	72, 371
Colorado	12, 652	13, 144	12, 979	15, 290	16, 410	18, 625	18, 130	18, 794
Connecticut	813	930	877	1, 165	986	753	820	675
Delaware	270	253	350	395	203	154	150	80
District of Columbia	6	5	503	577	475	10		461
Florida	39	17		11	81	99	20	20
Georgia	4	6	7	85	979	1, 868	1, 826	1, 836

TABLE 380.—*Creamery butter production in factories in the United States, by States, 1918–1925*—Continued

[Thousand pounds—i. e., 000 omitted]

State	1918	1919	1920	1921	1922	1923	1924	1925
Idaho	4, 330	4, 514	4, 660	4, 935	7, 582	9, 888	13, 431	15, 101
Illinois	39, 855	44, 621	41, 051	48, 866	47, 249	51, 359	58, 225	56, 872
Indiana	40, 624	44, 659	39, 223	47, 854	48, 158	51, 484	54, 355	54, 362
Iowa	86, 943	87, 915	84, 290	106, 516	129, 778	151, 407	159, 378	156, 361
Kansas	36, 660	35, 642	32, 899	37, 000	40, 204	42, 674	46, 844	47, 768
Kentucky	3, 177	5, 321	7, 875	10, 746	12, 010	12, 244	12, 942	14, 087
Louisiana	70	46	55	160	87	185	125	90
Maine	1, 453	1, 141	727	719	596	402	568	479
Maryland	297	315	440	620	542	382	500	339
Massachusetts	2, 439	2, 849	3, 198	3, 895	2, 999	1, 844	1, 790	2, 026
Michigan	42, 582	45, 207	45, 404	55, 011	59, 954	64, 818	70, 676	70, 729
Minnesota	124, 816	130, 786	120, 297	154, 268	170, 463	199, 926	229, 474	245, 669
Mississippi	2, 274	2, 477	2, 626	4, 286	5, 778	5, 715	5, 648	4, 895
Missouri	30, 175	38, 411	35, 228	42, 422	46, 565	51, 818	56, 801	55, 953
Montana	4, 581	5, 389	5, 168	7, 439	7, 713	10, 667	13, 874	13, 968
Nebraska	62, 477	60, 467	56, 661	66, 653	74, 809	76, 748	81, 423	83, 930
Nevada	1, 496	1, 726	2, 018	2, 388	2, 642	2, 361	2, 640	2, 593
New Hampshire	459	397	300	305	309	424	271	137
New Jersey	133	179	143	214	261	437	642	170
New Mexico	10	6	6	29	129	185	251	326
New York	13, 898	13, 716	16, 949	24, 298	25, 474	18, 893	25, 974	16, 960
North Carolina	678	829	832	1, 263	1, 549	1, 718	1, 683	1, 558
North Dakota	12, 050	14, 697	13, 419	16, 177	21, 675	23, 355	28, 515	31, 500
Ohio	54, 555	60, 573	65, 594	78, 724	84, 193	79, 195	80, 932	77, 568
Oklahoma	8, 167	10, 481	9, 596	10, 427	11, 142	14, 065	14, 421	15, 841
Oregon	13, 357	14, 432	14, 288	15, 289	17, 158	18, 128	20, 993	21, 575
Pennsylvania	10, 977	12, 466	11, 422	14, 629	12, 803	13, 142	12, 444	11, 476
Rhode Island	70	65	58	77	76	76	105	68
South Carolina	17	27	16	19	165	537	527	429
South Dakota	18, 536	17, 479	14, 071	18, 886	21, 146	27, 447	24, 643	29, 193
Tennessee	2, 068	3, 735	5, 903	8, 707	9, 164	11, 463	12, 762	11, 286
Texas	4, 982	8, 289	9, 125	11, 257	10, 179	10, 956	11, 997	10, 866
Utah	4, 174	3, 796	3, 567	4, 549	5, 913	7, 500	8, 585	7, 034
Vermont	10, 858	10, 677	13, 253	14, 919	12, 289	11, 935	12, 294	9, 327
Virginia	1, 372	1, 597	2, 210	2, 833	3, 118	4, 231	4, 614	3, 842
Washington	16, 407	18, 487	23, 751	23, 228	24, 239	26, 666	29, 331	25, 673
West Virginia	180	328	867	530	420	276	446	533
Wisconsin	82, 860	85, 054	97, 355	124, 504	142, 285	139, 895	153, 335	161, 369
Wyoming	1, 286	1, 140	875	1, 277	1, 403	1, 894	1, 941	1, 999
Total	818, 175	868, 125	863, 577	1, 054, 938	1, 153, 515	1, 252, 214	1, 356, 060	1, 361, 526

Division of Dairy and Poultry Products. The compilations are made from reports of factories to the division.

TABLE 381.—*Creamery butter: Net receipts at five markets, 1918–1926*

[Thousand pounds—i. e., 000 omitted]

NEW YORK

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	13, 763	12, 637	14, 938	14, 314	19, 145	25, 409	23, 297	19, 181	17, 091	15, 409	12, 904	13, 111	201, 198
1918	------	11, 571	12, 468	10, 867	15, 018	21, 902	20, 986	15, 708	13, 367	16, 032	11, 639	11, 642	------
1919	13, 590	13, 325	13, 419	14, 157	18, 934	23, 498	19, 314	16, 335	16, 244	13, 405	12, 635	9, 954	184, 805
1920	9, 750	9, 259	10, 724	6, 485	10, 144	17, 623	17, 801	15, 048	12, 329	9, 935	8, 627	8, 301	136, 076
1921	10, 003	9, 116	10, 721	11, 793	17, 640	22, 513	17, 885	19, 562	17, 514	14, 113	12, 866	12, 311	176, 087
1922	13, 385	13, 620	15, 918	13, 424	20, 438	28, 588	25, 391	19, 083	15, 053	13, 958	13, 240	12, 235	204, 333
1923	16, 829	12, 841	16, 706	15, 409	20, 444	26, 469	23, 594	18, 172	15, 823	14, 924	12, 750	13, 070	207, 031
1924	13, 389	13, 763	15, 800	15, 290	18, 231	25, 344	27, 579	20, 835	18, 626	17, 080	11, 909	13, 422	211, 274
1925	15, 207	13, 847	15, 546	15, 654	18, 971	24, 131	22, 034	18, 252	18, 439	16, 964	13, 755	14, 517	207, 317
1926	15, 321	15, 018	17, 953	17, 194	19, 406	27, 400	24, 817	17, 650	17, 458	15, 025	13, 648	13, 766	214, 657

TABLE 381.—*Creamery butter: Net receipts at five markets, 1918–1926*—Continued

[Thousand pounds—i. e., 000 omitted]

CHICAGO

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	12,006	11,479	13,202	13,589	20,376	26,813	23,354	18,882	13,967	13,132	10,641	11,860	189,302
1918	------	11,005	11,802	11,873	12,207	20,088	21,990	15,225	12,568	12,256	9,084	9,608	------
1919	10,188	8,413	9,472	10,657	19,152	27,588	29,358	15,339	10,876	8,894	6,383	6,257	153,577
1920	8,321	7,809	9,422	8,551	12,887	22,214	22,843	16,699	12,776	9,438	7,592	7,557	146,109
1921	8,312	8,190	10,082	11,997	18,009	23,619	17,815	17,600	12,287	12,122	9,246	10,756	160,035
1922	11,265	9,959	11,726	11,885	19,483	26,156	22,457	17,841	12,949	11,072	9,632	11,736	176,161
1923	13,704	11,840	13,076	13,184	19,327	27,191	21,593	15,436	13,855	12,719	11,642	13,170	186,737
1924	14,012	15,641	16,932	15,779	22,260	27,690	27,255	21,193	15,998	14,258	10,672	11,650	213,349
1925	12,739	11,767	14,193	15,101	22,802	29,398	27,650	22,342	14,748	15,489	12,011	11,988	210,228
1926	13,677	12,968	14,955	15,380	20,249	26,802	23,467	17,861	14,373	12,389	11,000	12,474	195,545

PHILADELPHIA

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	3,936	3,584	4,247	4,153	5,318	7,613	6,219	5,230	4,281	4,190	3,695	3,874	56,341
1918	------	681	2,166	2,054	2,968	4,084	3,903	3,364	2,827	2,848	2,226	2,396	------
1919	3,161	2,687	3,099	3,391	4,186	5,506	4,155	3,601	3,424	3,180	3,460	2,474	42,324
1920	2,698	2,910	2,809	2,450	3,041	5,402	4,836	3,946	3,884	3,118	2,488	2,617	40,202
1921	2,686	2,329	3,191	3,376	5,075	6,450	5,362	4,723	4,222	3,951	3,459	3,756	48,580
1922	4,536	3,836	4,032	3,678	5,377	7,267	5,681	4,913	3,779	3,578	3,368	3,474	53,519
1923	4,223	3,614	5,023	4,387	5,348	7,853	5,306	4,998	4,350	4,427	3,527	3,649	56,705
1924	4,332	4,359	4,345	4,807	5,719	8,751	8,165	5,891	4,747	4,520	3,802	3,946	63,384
1925	3,904	3,781	4,646	4,518	5,069	7,714	6,582	5,627	4,306	4,473	4,319	4,547	59,516
1926	4,680	4,748	5,635	5,417	5,983	8,168	7,061	5,467	4,558	4,398	4,759	4,653	65,536

BOSTON

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	3,844	4,025	4,439	4,450	7,594	12,054	11,104	6,962	5,794	4,550	3,303	2,985	71,105
1918	------	1,540	3,283	2,802	4,938	9,634	9,000	5,214	3,723	1,588	3,054	2,875	------
1919	3,318	3,159	2,595	3,619	7,898	11,662	11,324	6,291	4,332	2,821	1,827	1,655	60,531
1920	2,658	2,626	4,437	3,066	1,698	13,498	11,909	7,233	5,590	3,614	1,966	2,045	60,340
1921	3,077	3,102	3,478	3,208	6,650	10,363	11,116	4,387	5,782	5,205	2,713	2,557	61,618
1922	3,957	3,550	3,963	3,622	9,017	14,020	9,558	7,158	4,967	3,785	3,706	3,369	70,672
1923	3,802	4,020	4,810	5,439	7,037	12,007	10,977	7,001	6,001	4,582	4,199	3,348	73,223
1924	4,362	5,026	5,368	5,482	7,754	13,400	12,538	7,422	6,437	4,551	2,331	2,351	77,022
1925	4,027	4,429	4,628	4,498	7,514	10,482	11,300	8,843	5,783	4,626	3,567	3,298	72,089
1926	4,184	5,316	5,539	5,313	6,620	11,079	10,834	7,204	6,364	4,237	3,356	3,688	73,734

SAN FRANCISCO

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	1,579	1,331	1,706	2,171	2,357	2,290	2,131	2,109	1,694	1,824	1,651	1,653	22,496
1919	1,077	1,257	1,712	2,373	2,512	2,088	1,853	1,489	927	1,138	1,241	1,132	18,799
1920	1,265	1,416	1,848	2,669	2,352	1,868	1,482	1,520	1,412	1,530	1,330	1,337	20,028
1921	1,404	1,225	1,685	1,993	1,917	1,960	2,005	2,304	1,755	2,157	2,015	1,460	21,880
1922	1,481	1,345	1,829	2,226	2,321	2,331	1,851	1,919	1,720	1,894	1,583	1,520	22,020
1923	1,746	1,296	1,666	2,045	2,093	2,450	2,224	1,890	1,596	1,620	1,407	1,651	21,684
1924	1,355	1,432	1,637	2,220	2,973	2,293	2,169	1,941	1,659	1,535	1,448	1,787	22,449
1925	1,910	1,357	1,712	2,370	2,482	2,416	2,404	2,492	1,729	1,916	1,802	1,849	24,439
1926	1,553	1,457	1,906	2,247	2,207	2,482	2,214	2,294	2,008	2,117	1,417	1,471	23,463

TOTAL

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	35,128	33,057	38,533	38,677	54,790	74,179	66,104	52,365	42,827	39,105	32,194	33,486	540,442
1919	31,334	28,841	30,297	34,197	52,682	70,337	57,004	43,055	35,803	29,438	25,546	21,502	460,036
1920	24,692	24,019	29,240	23,221	30,125	60,605	58,871	44,446	35,991	27,685	22,003	21,857	402,755
1921	25,482	23,962	29,107	32,367	49,291	64,905	54,213	48,576	41,560	37,548	30,299	30,840	468,150
1922	34,624	32,310	37,468	34,835	56,636	78,362	64,938	50,914	38,477	34,287	31,529	32,334	526,714
1923	40,304	33,611	41,281	40,464	54,249	75,970	63,694	47,497	41,625	38,272	33,525	34,888	545,380
1924	37,450	40,221	44,082	43,578	56,937	77,487	77,706	57,282	47,467	41,950	30,162	33,156	587,478
1925	37,781	35,181	40,725	42,141	56,838	74,171	69,970	57,556	45,005	43,468	35,454	36,199	574,489
1926	39,424	39,507	46,078	45,501	54,464	75,931	68,303	50,476	44,761	38,166	34,180	36,054	572,935

Division of Statistical and Historical Research. Compiled from records of the Division of Dairy and Poultry Products.

TABLE 382.—*Butter: Gross receipts at six markets, by State of origin, 1921–1926*

[In thousand pounds—i. e., 000 omitted]

NEW YORK

State	1921	1922	1923	1924	1925	1926												
						Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Minnesota	65,153	80,589	84,944	74,166	57,206	57,038	4,336	3,781	5,781	5,319	4,565	6,377	6,835	4,756	4,908	3,707	3,293	3,380
Iowa	33,793	43,489	48,440	57,781	56,833	62,093	4,132	4,098	4,976	5,347	5,875	8,736	7,105	5,194	5,042	4,171	3,910	3,507
Illinois	32,001	33,538	33,830	35,039	39,440	40,037	3,088	3,028	3,574	3,337	4,517	4,751	4,447	2,441	2,573	2,662	2,349	3,270
Nebraska	18,312	24,074	20,359	24,811	25,088	27,157	2,072	2,130	2,090	1,852	2,556	2,744	2,949	2,340	2,441	2,245	1,991	1,747
Ohio	12,424	10,631	9,834	7,350	7,121	6,674	346	532	433	274	444	989	955	751	455	655	423	417
Wisconsin	11,609	12,803	11,771	13,730	16,903	17,792	1,543	1,295	1,566	1,706	1,501	2,254	1,799	1,374	1,249	1,189	1,100	1,126
New York	10,853	9,598	6,130	8,185	6,974	6,177	186	199	230	210	495	1,088	1,048	697	419	624	611	370
Michigan	8,490	7,213	7,075	11,265	15,498	13,669	994	1,278	933	942	803	1,901	1,491	1,525	1,595	935	575	697
Indiana	6,561	5,991	5,222	3,788	5,958	5,209	446	388	419	196	456	935	510	545	462	385	229	238
Missouri	3,404	3,674	4,649	3,930	5,396	6,045	257	364	461	373	590	1,083	641	322	464	385	625	480
Pennsylvania	1,952	2,349	1,279	988	525	1,176	72	122	91	110	153	124	213	30	101	53	44	63
Tennessee	1,454	1,185	1,132	859	1,034	1,881	110	90	78	65	231	318	395	256	196	47	42	47
California	1,048	364	288	87	102	1				(1)								1
Kansas	859	429	1,294	1,064	847	2,065	2	12	110	65	155	352	336	180	213	184	244	212
Massachusetts	824	417	259	647	345	204	23	3	46	47	1	(1)	1		6	3	44	30
Virginia	597	652	417	684	432	417	17	10	7	8	36	46	28	33	75	49	78	30
South Dakota	388	353	260	270	279	1,218	127	158	100	73	93	93	102	30	87	56	92	207
Kentucky	315	701	517	954	463	710	74	41	75	24	100	140	91	24	65	19	45	12
North Dakota	273	246	134	397	193	109	7	13	29	2		34			4		20	(1)
Vermont	208	27	46		58	22	1		2	11	4	(1)		(1)	(1)	(1)	3	1
Maryland	163	380	151	132	276	104	12	8	8	5	1	29	6	2	1	22	3	7
North Carolina	131	195	358	198	133	155	12	10	14	13	30	24	6	17	9	8	7	5
Georgia	94	95	98	97	178	52	9	6	2	3	10	15	1	2	(1)	(1)	2	2
Alabama	93	124	234	70	138	171	34	23	15	16	18	15	18	10	3	4	6	9
Washington	79	29	194		27	224		24									(1)	200
New Jersey	48	80	129		22	466	(1)	1	1	(1)	(1)	22	1	1	31	194	193	22
Mississippi	35	54	142		203	663	39	58	8	40	122	57	104	92	68	2	27	46
Oklahoma			261		327	535				43	85	78	108	155	2	33	10	21
Montana				465	37	19												19
Other States	998	496	686	852	181	513	77	4	89	74	7	56	30	5	28	27	71	45
Canada	1,819	1,828	3,631	950	1,850	146	23								59	32	32	
Total	213,978	241,604	243,764	248,759	244,127	252,742	18,039	17,682	21,138	20,245	22,848	32,261	29,220	20,782	20,556	17,691	16,069	16,211

BOSTON

Illinois	32, 819	33, 273	33, 517	25, 384	13, 555	11, 766	914	851	1, 219	687	980	1, 420	1, 240	621	857	850	958	1, 169
Minnesota	10, 249	11, 213	15, 880	22, 744	26, 975	30, 948	1, 642	2, 397	2, 367	2, 513	2, 735	4, 205	4, 432	3, 666	3, 141	1, 835	1, 138	877
Vermont	7, 338	6, 339	5, 854	5, 923	4, 071	3, 075	257	192	223	332	250	485	455	179	180	147	157	218
New York	4, 629	5, 776	5, 578	5, 468	5, 769	3, 327	245	161	95	66	176	615	954	429	167	111	90	218
Iowa	3, 100	3, 982	3, 023	3, 361	4, 360	4, 616	269	263	337	410	549	530	513	388	658	271	256	172
Ohio	2, 985	4, 041	3, 064	3, 282	2, 661	2, 046	206	273	131	112	150	500	245	57	120	64	39	149
Indiana	2, 821	2, 554	2, 722	2, 436	1, 434	1, 122	54	22	9	10	91	245	183	88	68	54	197	101
Nebraska	2, 593	2, 152	3, 274	6, 378	8, 086	8, 860	338	496	517	671	908	1, 521	1, 325	1, 031	742	534	429	348
Michigan	2, 280	2, 533	1, 555	2, 394	1, 867	1, 928	52	33	55	44	136	797	439	115	57	62	33	105
South Dakota	998	2, 133	1, 891	2, 450	3, 070	3, 609	166	363	371	385	294	469	643	313	324	240	39	2
Missouri	913	884	646	1, 404	3, 170	2, 940	193	201	252	92	291	549	517	245	320	208	22	50
Wisconsin	748	2, 215	1, 813	1, 983	2, 463	3, 101	68	162	180	243	314	434	782	440	280	107	70	21
Massachusetts	571	870	702	723	989	735	5	148	2	13	12	70	32	1	1	47	88	316
New Hampshire	352	467	263	143	19	22	2	2	1	2	2	4	2	(1)	2	2	1	2
Pennsylvania	246	303	188	26	143	119		20					6		47	1		45
Kentucky	221	132	72	91	45	30		30						(1)				
Kansas	148	404	402	507	1, 048	1, 705	138	95	127	156	272	303	184	142	8	34	159	87
Maine	139	197	87	196	192	116	26	24	5	5	13	15	8	3	11	3	(1)	3
Oklahoma	94	319	166	288	151	463	10	24	43	20	28	61		91	70	10		106
North Dakota	4	302	1, 545	1, 230	2, 167	2, 479	139	230	318	239	273	241	249	307	94	177	65	147
Montana		23	49	220	39	24											24	
Other States	700	361	231	261	201	211		16	2	4	1	47	24	21	20	25	22	29
Canada	355		137	29		1										1		
Total	74, 303	80, 473	82, 659	86, 921	82, 476	83, 243	4, 724	6, 003	6, 254	6, 004	7, 475	12, 511	12, 233	8, 137	7, 167	4, 783	3, 787	4, 155

CHICAGO

Wisconsin	69, 253	74, 773	70, 588	79, 928	75, 941	72, 200	5, 049	4, 736	5, 496	6, 597	7, 956	10, 987	9, 122	5, 902	5, 166	4, 173	3, 293	3, 843
Minnesota	33, 267	37, 483	39, 611	46, 767	54, 859	43, 569	3, 402	3, 247	3, 700	3, 992	3, 828	5, 003	4, 316	3, 784	3, 306	3, 309	2, 715	2, 967
Iowa	32, 111	40, 735	42, 108	46, 896	46, 150	41, 092	2, 617	3, 108	3, 294	3, 076	4, 195	5, 740	4, 786	3, 863	3, 121	2, 687	2, 319	2, 286
Nebraska	15, 588	16, 958	17, 433	20, 054	19, 361	22, 505	1, 676	1, 203	1, 179	1, 096	1, 648	2, 597	3, 311	2, 519	1, 856	1, 641	1, 715	2, 064
South Dakota	8, 985	9, 639	14, 249	15, 971	18, 151	16, 402	1, 127	1, 263	1, 484	1, 320	1, 502	2, 009	2, 228	1, 554	1, 057	983	820	985
Kansas	8, 000	5, 935	10, 300	11, 098	7, 864	8, 036	804	632	667	551	1, 093	1, 015	591	330	524	390	558	881
Illinois	7, 263	7, 465	7, 392	8, 870	5, 819	6, 632	387	258	153	255	619	1, 327	1, 101	954	616	420	240	302
Missouri	6, 126	8, 959	11, 188	11, 975	9, 678	10, 411	403	370	754	581	1, 376	1, 075	1, 174	1, 291	937	731	1, 068	651
North Dakota	3, 008	3, 049	3, 418	6, 301	8, 511	6, 114	485	365	800	581	392	961	792	654	333	139	218	194
Oklahoma	1, 875	1, 733	1, 894	2, 144	2, 735	4, 392	127	165	318	330	1, 064	841	458	422	242	89	41	295
Colorado	1, 764	1, 317	1, 239	1, 829	430	828	170	174	17	6	52	92	68	102	22	(1)	31	94
Ohio	1, 500	874	425	360	619	417	3	3	2	3	205	55	5	60	17	9	7	48
Michigan	1, 556	1, 609	1, 966	1, 761	1, 474	1, 297	171	60	86	41	139	343	264	57	60	11	5	60
Indiana	1, 018	1, 027	1, 109	1, 102	805	867	73	53	42	37	115	257	107	70	41	30	14	28
Kentucky	630	291	871	560	539	957	17	16	35	28	136	113	29	103	93	69	255	63

[1] Not over 500 pounds.

TABLE 382.—*Butter: Gross receipts at six markets, by State of origin, 1921–1926*—Continued

[In thousand pounds—i. e., 000 omitted]

CHICAGO—Continued

State	1921	1922	1923	1924	1925	1926												
						Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Texas	646	35	216	102	78	212	1	(1)	22	23	118	1						47
Montana	477	299	643	1,077	343	107	4	4	17	1		3	6	13			4	55
Tennessee	110	34	112	35	137	126	2	23	17	9	7	3	1	25	5	2	1	31
Mississippi	81	298	144	198	66	44	(1)	3	7	14	9	6	2	2				1
California	44	192	319	77		(1)				(1)								
Pennsylvania	20	19	36	103	55	43	21				(1)					(1)	1	21
Idaho	4	34	233	202		64												64
New York	3	49	25	153	69	35		1					7		1	(1)	1	25
Utah	(1)	120	50	192														
Other States	234	98	108	328	154	196	6	3		3	41	23	20	1	10	4	1	84
Canada		47	215		470													
New Zealand		29																
Total	193,593	213,101	225,892	258,083	254,308	256,546	16,545	15,687	18,090	18,544	24,495	32,421	28,388	21,606	17,387	14,987	13,307	15,089

PHILADELPHIA

State	1921	1922	1923	1924	1925	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Minnesota	17,502	24,776	27,194	34,753	32,168	40,986	2,669	3,061	3,498	3,930	4,023	4,756	4,230	3,274	3,207	2,869	2,590	2,861
Illinois	14,726	9,973	11,753	10,874	11,156	7,766	1,031	728	753	653	470	827	874	487	434	344	839	296
Ohio	4,860	4,309	2,699	3,437	3,224	3,505	277	246	178	154	304	739	400	260	142	228	297	290
Pennsylvania	4,723	3,797	2,571	2,297	1,735	1,268	88	82	90	95	79	176	98	106	86	114	72	182
Indiana	3,987	4,447	3,757	2,392	1,688	1,848	139	131	163	139	160	190	154	196	146	190	133	107
Wisconsin	3,526	4,710	4,119	4,616	2,963	4,305	378	267	508	211	320	455	488	298	353	282	197	548
Michigan	2,485	1,605	1,812	3,446	6,415	3,418	248	247	362	287	193	284	762	639	145	66	109	76
New York	2,024	2,275	5,673	1,926	2,221	1,262	110	22	2	23	32	60	2	118	80	215	334	294
Iowa	961	1,391	1,314	2,783	2,313	4,288	76	130	252	178	464	856	636	352	400	339	335	270
Missouri	761	483	942	1,677	637	1,190	170	189	268	179	158	44	47	81	42	93	209	19
Tennessee	644	1,754	915	1,979	723	1,101	30	5	3	31	175	246	251	156	98	100	5	1
Virginia	494	1,145	1,247	1,338	1,196	1,027	57	50	73	50	77	167	114	153	72	88	69	68
California	444	357	59	224	24	287											81	206
New Jersey	398	57	285	19	245	44						20					24	

North Dakota	274	253	42	44		40		(1)	(1)	14	11		14				1	
Delaware	232	238	71	21	139	1		(1)			1		(1)	(1)	(1)	(1)		
Nebraska	160	1,677	1,757	2,409	3,510	4,957	384	504	558	496	551	697	368	269	232	270	342	286
Maryland	102	453	1,057	137	138	242	7	3	3	(1)	33	(1)	29	53	12	29	40	33
South Dakota	101	6	11	110	76	158		42	9		2	33	8	14	9	24	6	11
Kentucky	92	159	119	187	57	221	1		(1)	1		91	59	35		(1)	34	(1)
Kansas	79	86	223	320	628	127			10	10	44	25	2	4	28	6		
North Carolina	55	1	14	7	26	87		3	3	1	(1)	25	27	9	17	2		(1)
West Virginia	24	93	160	145	146	197	9	12	10	13	13	14	17	17	26	19	20	27
Montana	8			221	30	44												44
Mississippi	3	346	401	311	115	276			12	41	87	91		45				
Other States	223	140	151	367	269	400		1	31	47	41	84	19	59	16	50	29	23
Canada	38		252	391	173													
Total	58,926	64,551	68,598	76,731	72,064	79,315	5,671	5,723	6,816	6,553	7,238	9,880	8,608	6,625	5,513	5,328	5,757	5,630

SAN FRANCISCO

California	23,318	23,352	21,805	22,984	21,587	20,701	1,546	1,471	2,054	2,275	1,949	1,807	1,795	1,928	1,698	1,726	1,121	1,331
Oregon	647	585	1,177	948	1,195	2,306	63	71	114	233	444	410	276	104	120	188	136	132
Washington	573	332	682	606	469	327	30	1	24	16		16	(1)	27	11	83	102	17
Nevada	412	388	293	258	252	63	6	5	9	2	7		2	2	1	4	5	20
Idaho	246	402	502	490	1,013	1,191	106	74	95	54	38	57	46	99	151	220	97	154
Montana	100	155	361	700	1,895	2,331	43	56	49	64	159	422	266	451	323	241	207	50
North Dakota	49	145	76		20													
Utah	38	136	179	158	98	95	9	11					15	30	4		(1)	28
Illinois	34	118		1	204													
Colorado	27	120	30	21	545	192	23					73	22		45	29		
Nebraska	25	46	25	47	349	55						29	26					
Minnesota		74		172	208	339		25				100	156	58				
Iowa		51	24		237													
Other States	201	12	41	26	234	4	1		3			(1)	(1)					
Canada			316		326													
Total	25,730	25,916	25,511	26,411	28,752	27,604	1,827	1,714	2,348	2,644	2,397	2,920	2,004	2,699	2,362	2,491	1,668	1,730

[1] Not over 500 pounds.

[2] Included in other States.

TABLE 382.—*Butter: Gross receipts at six markets, by State of origin, 1921–1926*—Continued

[In thousand pounds—i. e., 000 omitted]

LOS ANGELES

State	1921	1922	1923	1924	1925	1926 Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
California	-------	-------	-------	-------	23,422	22,011	2,034	1,626	2,249	2,172	2,186	2,161	1,952	1,573	1,430	1,539	1,467	1,622
Idaho	-------	-------	-------	-------	8,555	13,101	942	772	900	1,041	1,693	1,191	1,329	1,055	1,059	1,013	1,142	964
Oregon	-------	-------	-------	-------	1,196	1,922	33	-------	54	252	435	423	119	82	196	155	117	56
Washington	-------	-------	-------	-------	1,157	1,620	73	64	143	178	197	201	175	102	142	126	129	90
Nevada	-------	-------	-------	-------	550	589	86	34	44	-------	43	66	63	52	49	23	83	41
Utah	-------	-------	-------	-------	1,219	1,952	116	67	144	174	255	211	211	170	148	220	81	155
Montana	-------	-------	-------	-------	1,541	1,935	24	-------	86	73	293	540	292	197	132	192	-------	106
Colorado	-------	-------	-------	-------	875	749	25	55	90	74	130	152	107	59	26	27	-------	4
Wisconsin	-------	-------	-------	-------	294	45	25	-------	-------	-------	-------	20	-------	-------	-------	-------	-------	-------
Illinois	-------	-------	-------	-------	141	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
New York	-------	-------	-------	-------	236	6	-------	6	-------	-------	-------	-------	-------	-------	-------	-------	([1])	-------
Minnesota	-------	-------	-------	-------	410	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
Nebraska	-------	-------	-------	-------	115	16	-------	-------	-------	-------	-------	-------	-------	11	5	-------	-------	-------
Other States	-------	-------	-------	-------	210	87	([1])	([1])	([1])	-------	43	2	10	4	2	24	([1])	2
Total	-------	-------	-------	-------	39,924	44,033	3,358	2,624	3,710	3,964	5,275	4,967	4,258	3,305	3,189	3,324	3,019	3,040

Division of Statistical and Historical Research. Compiled from reports of the Division of Dairy and Poultry Products.

[1] Not over 500 pounds.

TABLE 383.—*Creamery butter: Cold storage holdings, United States, 1915–1926*

[Thousand pounds—i. e., 000 omitted]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
Average:												
1916–1920	48, 697	32, 673	19. 510	9, 849	6, 288	14, 395	59, 134	100, 967	112, 059	106, 552	93, 700	73, 147
1921–1925	45, 981	30, 730	19, 446	9, 477	5, 488	16, 076	66, 008	106, 191	118, 381	110, 116	91, 649	67, 999
1915								68, 578	101, 662	99, 450	92, 719	71, 849
1916	48, 977	31, 139	15, 033	3, 346	1, 082	7, 017	53, 863	102. 537	105. 836	100, 522	85, 200	67, 292
1917	46, 134	30, 474	16, 952	6, 805	3, 607	9, 953	49, 982	88, 992	108, 179	109, 154	100, 115	79, 928
1918	50, 726	26, 618	18, 808	14, 629	9, 536	12, 698	49, 140	88, 305	99, 334	87, 883	80, 874	65, 111
1919	43, 910	36, 777	24, 191	11, 909	9, 659	29, 435	90, 158	123, 546	131, 388	121, 816	100, 474	73, 654
1920	53, 737	38, 359	22, 568	12, 555	7, 554	12, 872	52, 526	101, 455	115, 558	113, 385	101, 778	79, 750
1921	58, 682	41, 486	27, 103	14, 732	7, 712	21, 682	61, 991	82, 838	92, 292	90, 116	77, 983	65, 129
1922	48, 412	35, 047	22, 582	9, 113	3, 830	13, 202	67, 410	103, 151	112, 039	96, 680	73, 857	47, 773
1923	26, 819	16, 122	8, 910	4, 824	3, 248	10, 112	62, 768	101, 774	102, 731	96, 117	76, 472	51, 508
1924	30, 290	15, 246	9, 847	7, 842	8, 913	22, 348	74, 184	134, 118	156, 440	153, 494	135, 018	100, 832
1925	65, 694	45, 748	28, 789	10, 875	3, 739	13, 030	63, 687	109, 075	128, 403	114, 172	94, 916	74, 754
1926	52, 785	39, 381	26. 313	17, 392	17, 527	30, 561	86, 897	131, 152	138, 151	125, 342	100, 871	64, 381

Cold Storage Report Section.

TABLE 384.—*Butter: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended December 31							
	Average, 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	113	6, 934	6	61, 486	3	65, 437	6	59, 282
Australia	46	77, 859	[1] 2, 368	53, 798	[1] 20	111. 086	[2] 13	128, 494
Canada	3, 388	3, 973	2, 738	13, 174	1, 174	22, 344	100	26, 647
Denmark	6, 241	195, 530	1, 593	246, 157	2, 049	272, 033	1, 744	270, 674
Estonia			(4)	5, 175		7. 025		14, 208
Finland	2, 370	26, 337	103	14, 476	14	18, 184	4	29, 081
Irish Free State					8, 757	51, 187	9, 381	44, 975
Italy	972	7, 870	526	2, 905	1, 002	6, 436	259	8, 010
Latvia [2]			48	6, 399	2	8, 084	10	15, 772
Netherlands	4, 987	75, 133	1, 687	52, 769	3, 613	76, 570	5, 756	87, 598
New Zealand	47	38, 761	7	140. 016	1	142, 179	13	139, 476
Russia	2, 202	150, 294	[2] 112	10, 978	[2] 339	[2] 49, 456	[2] 191	[2] 55, 476
Spain	939	259	378	391	344	423	295	583
Sweden	330	45, 870	3. 499	5, 420	1, 234	11, 827	410	20, 333
PRINCIPAL IMPORTING COUNTRIES								
Algeria	1, 946	9	1, 271	35	1, 553	36	1, 830	32
Austria			3, 600	1	3, 864	[2] 10	2. 856	[2] 334
Austria-Hungary	6, 281	4, 267						
Belgium	14, 024	3, 125	21, 337	220	10, 322	513	9, 202	870
China	[4] 1, 677		1, 702		1, 551		1, 697	
Cuba	1, 459		2, 285		2, 443			
Czechoslovakia			7. 806	24	3, 637	[2] 58	1. 230	[2] 310
Dutch East Indies	4, 152		7, 322		7, 092		[5] 5. 747	
Egypt	2, 350	[6] 166	1, 672	74	2, 354	57	2, 384	56
France	13, 713	40, 769	20, 876	17, 314	6. 178	7, 997	7, 405	9, 191
Germany	111, 441	498	2, 903	147	117, 896	59	212, 993	304
Greece	206	8	5, 677	[2] 6	10, 727		[7] 546	
Norway	976	3, 137	5, 826	26	1, 276	419	1, 467	468
Peru	462	20	1, 337	12	1, 814	10	1, 653	9
Philippine Islands	1, 665		853		1, 298		991	
Switzerland	11, 106	44	14, 684	20	19, 993	252	19, 092	177
Trinidad and Tobago	847		1, 092	[2] 18	1, 049	[2] 21	918	[2] 26
Union of South Africa	3, 913	26	1, 166	601	1, 579	411	705	793
United Kingdom	455, 489	1, 179	554, 803	2, 092	570, 761	2. 239	616, 300	1, 445
United States	1, 647	4. 125	23, 741	5, 846	19, 405	8, 257	7, 212	5, 343
Other countries	19, 025	3, 100	19, 805	11, 392	18, 167	11, 758	19, 503	11, 682
Total	674, 014	689, 293	712, 823	650, 972	821, 509	874, 398	931, 913	931, 649

Division of Statistical and Historical Research. Official sources, except where otherwise noted. Butter includes all butter made from milk, melted and renovated butter, but does not include margarine, cocoa butter or ghee.

[1] Year beginning July 1.
[2] International Yearbook of Agricultural Statistics.
[3] Less than 500 pounds.
[4] Four-year average.
[5] Java and Madura only.
[6] Two-year average.
[7] Eight months. International Crop Report and Agricultural Statistics.

TABLE 385.—*Butter: Estimated price per pound, received by producers, in the United States, 1910–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Weighted average
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Average:													
1910–1913	27.7	26.6	25.7	25.2	24.3	23.3	23.2	24.1	25.2	26.3	27.6	28.4	25.2
1914–1920	39.1	37.5	36.7	37.0	36.5	35.3	35.1	36.1	37.8	39.8	41.6	42.8	37.4
1921–1925	42.7	40.7	40.0	38.8	37.1	34.9	35.6	36.9	38.3	40.4	42.2	43.4	38.6
1910	28.3	27.1	26.0	25.6	24.8	23.7	23.6	24.5	25.7	26.6	27.4	27.8	25.5
1911	26.0	23.4	22.6	22.0	20.8	20.4	21.0	22.4	23.4	24.5	26.3	27.8	22.9
1912	28.6	28.1	26.6	26.0	25.4	24.1	23.6	24.0	24.9	26.2	27.8	28.6	25.7
1913	28.0	27.6	27.6	27.3	26.2	25.1	24.8	25.4	26.7	27.8	28.7	29.2	26.7
1914	28.3	26.7	25.4	24.4	23.3	22.8	23.3	24.5	25.6	26.2	27.4	28.6	25.1
1915	28.3	27.4	26.3	25.6	25.2	24.5	24.2	24.4	24.9	25.8	27.0	28.0	24.7
1916	28.0	27.4	27.4	27.8	27.2	26.1	25.9	26.8	28.2	30.6	32.8	34.2	28.9
1917	33.8	33.8	33.8	34.8	35.6	34.2	33.8	35.0	37.5	39.9	41.4	42.5	35.9
1918	43.4	43.6	42.0	40.3	39.2	38.4	39.0	40.6	44.3	48.4	51.2	53.8	42.7
1919	52.2	46.7	45.7	49.0	49.7	48.2	47.7	49.0	50.6	53.8	58.0	60.6	50.3
1920	59.6	56.8	56.0	56.8	55.6	52.6	51.8	52.2	53.2	54.2	54.5	51.8	54.3
1921	47.0	43.6	41.2	38.5	34.0	29.2	31.6	35.4	37.4	39.6	41.0	40.7	37.0
1922	37.4	34.6	34.6	34.6	34.1	33.1	33.0	33.4	34.8	37.4	40.2	42.9	35.3
1923	43.0	42.0	41.6	40.8	39.4	37.9	37.0	38.0	40.2	42.2	44.3	45.8	40.4
1924	44.9	44.4	43.2	40.3	38.3	36.3	37.0	37.7	38.2	38.8	39.3	41.8	39.4
1925	41.3	38.7	39.5	39.7	39.5	38.2	39.2	40.0	41.1	44.2	46.1	46.0	40.7
1926	44.3	42.7	41.7	41.1	40.1	39.5	39.1	39.0	40.9	41.8	43.5	45.5	41.1

Division of Crop and Livestock Estimates.

TABLE 386.—*Butter, 92 score creamery: Average wholesale price, at leading markets*

NEW YORK

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Average:													
1914–1920	46	44	44	45	41	40	40	41	44	47	50	51	46
1921–1925	47	45	46	43	39	38	40	41	43	46	49	49	44
1910	33	30	33	31	28	28	28	29	30	30	31	30	30
1911	26	26	24	21	22	23	25	26	27	30	34	37	27
1912	39	32	31	33	30	27	27	27	30	31	34	37	32
1913	35	36	37	35	29	28	27	28	32	31	34	36	32
1914	33	29	28	25	26	27	28	30	31	32	35	34	30
1915	34	32	30	31	29	28	27	26	27	29	31	35	30
1916	33	34	37	36	31	30	29	31	34	35	39	40	34
1917	40	44	42	44	40	39	39	41	44	45	46	50	43
1918	52	50	44	42	42	44	45	46	56	56	63	69	51
1919	62	52	62	64	58	52	58	55	59	68	71	72	61
1920	65	66	67	71	61	57	57	55	59	60	68	55	61
1921	52	47	48	46	32	33	40	43	43	47	45	44	43
1922	37	37	38	38	38	37	36	35	41	46	51	54	41
1923	52	50	49	46	42	39	39	44	46	46	53	55	47
1924	53	50	47	38	39	41	40	38	38	39	43	45	43
1925	40	41	46	44	43	42	48	43	48	51	51	49	45
1926	45	45	43	39	41	41	40	42	45	47	51	55	44

TABLE 386.—*Butter, 92 score creamery: Average wholesale price, at leading markets*—Continued

CHICAGO

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Av. 1921-1925	45	45	46	41	36	38	38	39	42	44	48	48	42
1918			41	42	42	42	43	45	55	56	62	67	50
1919	60	49	60	62	57	51	51	53	57	64	69	68	58
1920	63	63	66	64	57	55	55	54	57	57	60	51	58
1921	48	47	47	44	29	32	39	40	42	45	44	43	42
1922	34	37	38	37	34	36	34	34	39	44	50	53	39
1923	50	50	49	45	40	39	38	43	46	47	52	53	46
1924	52	49	46	37	37	39	38	37	37	37	42	42	41
1925	39	40	48	43	41	42	42	42	46	49	50	47	44
1926	43	43	42	38	39	39	39	40	43	46	49	53	43
1926:													
Philadelphia	46	45	43	40	42	42	41	43	46	48	52	56	45
Boston	45	45	43	40	41	42	41	42	45	47	48	54	44
San Francisco	44	46	42	40	40	41	41	44	44	44	45	48	43

Division of Statistical and Historical Research. Compiled from Urner-Barry reports, 1910-1917, average of daily range; subsequently from reports of the Division of Dairy and Poultry Products, average of daily prices.

Earlier data for cities showing prices for 1926 only, available in 1925 Yearbook, p. 1094, Table 501.

TABLE 387.—*Butter: Average export price per pound in Copenhagen, Denmark, 1914-1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Average:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1914-1920	46.2	43.9	45.1	44.5	42.2	41.4	42.1	43.0	45.2	47.9	51.5	49.9	45.2
1921-1925	39.2	39.3	39.5	36.8	34.0	34.3	37.3	40.0	41.2	42.1	41.6	39.5	38.7
1914	26.1	25.6	25.6	24.1	23.4	23.9	25.9	24.4	25.0	27.8	27.3	29.9	25.8
1915	29.6	26.9	28.0	27.6	29.6	29.1	31.0	32.6	34.7	41.6	40.5	36.6	32.3
1916	33.8	35.4	37.8	36.8	36.3	35.7	36.7	40.1	42.1	42.6	44.3	44.9	38.9
1917	45.3	39.6	38.4	37.2	38.6	40.5	45.0	49.7	54.6	65.4	68.4	65.5	49.0
1918	64.2	63.7	64.0	65.0	65.3	64.7	65.1	65.0	62.0	58.3	75.6	76.0	65.7
1919	75.8	73.8	72.4	71.1	58.2	50.8	48.4	46.5	54.7	53.8	59.5	52.1	59.8
1920	48.9	42.1	49.2	49.8	44.2	44.8	42.4	42.9	43.6	45.7	44.7	41.0	45.2
1921	42.4	39.3	40.4	43.9	33.5	32.4	38.3	41.1	36.4	38.3	39.9	31.8	38.1
1922	31.1	31.0	32.9	33.8	33.5	37.0	39.4	39.1	41.1	40.7	39.9	39.7	36.6
1923	40.5	41.3	41.0	34.5	29.5	29.3	30.7	34.7	40.3	38.9	39.4	41.4	36.8
1924	40.0	39.5	36.9	31.3	36.4	33.4	37.8	41.1	42.3	46.1	44.2	46.8	39.6
1925	42.0	45.4	46.1	40.6	36.9	39.4	40.5	44.2	45.7	46.5	41.6	37.8	42.5
1926	36.5	40.2	38.8	36.2	34.8	35.7	35.4	36.1	36.6	36.3	34.9	37.1	36.6

Division of Statistical and Historical Research. Danish Butter Journal (Smor Tidende) official quotations. For earlier years, 1882-1913, see the United States Department of Agriculture Yearbook, 1923, p. 923.

Conversions from Danish quotations in ore per pound (1.1023 pounds) at par of exchange (100 ore=26.8 cents) to July, 1914; July, 1914, to date from weekly quotations in kroner per 100 kg., at average monthly exchange rate as quoted by Federal Reserve Board.

TABLE 388.—*American cheese: Production in the United States, 1917-1925*

[Thousand pounds—i. e., 000 omitted]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1917	8,519	9,415	11,918	17,577	28,932	38,796	35,296	32,248	37,613	22,303	14,262	8,070	264,949
1918	8,143	7,860	11,992	17,931	31,285	40,184	34,332	29,996	25,424	18,862	12,172	9,097	247,278
1919	10,966	11,866	19,009	21,642	34,849	44,509	35,465	30,940	26,257	23,114	13,107	10,044	281,837
1920	10,457	11,509	14,964	18,856	29,832	41,376	34,313	26,787	22,935	20,054	13,508	10,303	254,684
1921	11,889	12,857	17,678	23,521	34,556	36,444	26,977	27,652	23,612	21,496	13,426	11,618	261,726
1922	12,857	12,927	18,774	21,740	31,349	36,254	33,265	29,496	25,581	25,785	18,382	15,416	282,836
1923	15,092	15,396	20,184	24,614	32,942	41,382	38,288	31,822	28,648	25,566	18,236	16,608	308,108
1924	17,718	18,896	22,955	24,597	33,657	43,517	40,716	33,602	30,539	26,210	17,252	15,046	324,695
1925	16,834	17,991	21,598	26,869	38,012	45,782	43,706	37,659	31,548	28,253	20,349	18,619	347,240

Division of Dairy and Poultry Products.

TABLE 389.—*Cheese, wholemilk American cheddar: Production, United States, by States, 1919–1925*

[Thousand pounds—i. e., 000 omitted]

State	1919	1920	1921	1922	1923	1924	1925
Alabama			29		51		
Arizona	315	150	450	47	84	96	67
Arkansas				18			
California	5, 661	5, 043	5, 904	3, 226	3, 082	2, 850	3, 026
Colorado	161	81	54	42	99	434	293
Connecticut			2				
Delaware				4			
District of Columbia		43					
Georgia					3	44	24
Idaho	2, 578	1, 722	2, 117	3, 368	5, 311	7, 343	7, 320
Illinois	2, 538	999	1, 751	2, 401	2, 875	2, 498	2, 444
Indiana	70	42	117	62	78	306	198
Iowa	859	545	313	344	361	530	501
Kansas	26	19	61	147	110	176	192
Kentucky							37
Louisiana	1						
Maine						34	
Maryland	43	9	29	6			
Massachusetts	4						
Michigan	5, 188	4, 032	5, 064	3, 657	4, 342	5, 867	5, 844
Minnesota	8, 998	5, 502	5, 693	5, 291	7, 229	9, 790	8, 419
Mississippi							
Missouri	302	380	382	96	224	105	252
Montana	269	233	113	259	641	792	1, 296
Nebraska	30	3	61	43	68	135	275
Nevada			25	24		79	66
New Hampshire	8	3	77				6
New Jersey	446	130		634	196	155	
New Mexico				74	135	92	56
New York	46, 510	30, 829	37, 970	47, 726	37, 448	36, 608	38, 401
North Carolina	228	109	86	103	111	80	62
Ohio	963	659	654	195	128	366	253
Oklahoma	1			2		37	
Oregon	8, 348	8, 282	8, 777	8, 720	7, 678	9, 951	9, 903
Pennsylvania	2, 928	2, 673	3, 208	2, 209	2, 497	1, 750	1, 349
South Dakota	32	9	19		8	43	10
Tennessee	51	26	80	71	284	398	321
Texas	1		15	31			
Utah	907	849	1, 027	3, 219	2, 139	2, 162	1, 753
Vermont	2, 960	1, 382	1, 380	954	1, 200	1, 755	1, 120
Virginia	60	35	28	97	163	152	69
Washington	1, 145	1, 143	1, 910	2, 928	2, 762	2, 998	3, 076
West Virginia	56	24	41	16			
Wisconsin	201, 836	188, 548	182, 777	193, 376	226, 916	235, 186	258, 684
Wyoming	1, 612	1, 180	1, 543	3, 416	1, 791	1, 883	1, 923
Total	295, 144	254, 684	261, 727	282, 806	308, 014	324, 695	347, 240

Division of Dairy and Poultry Products.

TABLE 390.—*Cheese: Gross receipts at five markets, 1918–1926*

[Thousand pounds—i. e., 000 omitted]

NEW YORK

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	3, 064	2, 954	3, 531	3, 772	4, 480	5, 346	5, 821	4, 441	4, 052	4, 015	3, 689	2, 962	48, 127
1918	3, 256	3, 518	2, 657	2, 844	3, 899	5, 951	6, 687	4, 956	3, 670	5, 123	3, 833	4, 156	50, 550
1919	3, 479	3, 173	4, 393	5, 114	7, 908	7, 075	6, 972	5, 428	7, 121	6, 367	4, 621	4, 294	65, 045
1920	3, 337	2, 431	3, 803	1, 398	4, 093	6, 152	5, 703	5, 278	3, 483	3, 208	3, 756	3, 762	47, 004
1921	3, 274	3, 337	2, 883	4, 068	6, 003	5, 856	6, 655	4, 772	4, 308	4, 415	3, 657	2, 753	51, 981
1922	2, 739	2, 775	4, 063	4, 466	5, 047	6, 376	5, 379	4, 642	3, 942	3, 866	3, 607	3, 207	50, 109
1923	2, 906	3, 385	4, 341	4, 196	4, 610	5, 207	6, 110	4, 757	3, 845	3, 791	3, 544	2, 731	49, 425
1924	3, 299	2, 859	3, 367	3, 050	3, 609	4, 706	5, 235	3, 042	3, 594	3, 333	3, 684	3, 181	42, 959
1925	3, 098	2, 412	3, 002	3, 080	3, 132	4, 585	5, 728	4, 993	4, 571	4, 671	3, 952	2, 939	46, 163
1926	3, 255	2, 570	3, 476	3, 270	3, 685	5, 476	5, 101	3, 922	3, 834	4, 149	3, 326	3, 299	45, 363

TABLE 390.—*Cheese: Gross receipts at five markets, 1918–1926*—Continued

[Thousand pounds—i. e., 000 omitted]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
CHICAGO													
Av. 1921–1925	7,398	7,512	8,629	8,822	10,699	12,525	11,833	11,293	9,915	10,599	8,480	7,970	115,674
1918	------	------	6,202	5,549	4,957	7,614	8,536	6,674	6,016	5,698	4,634	5,019	------
1919	5,925	4,854	5,495	6,287	7,833	9,778	8,539	8,323	7,362	6,648	5,073	4,902	81,019
1920	5,328	5,100	7,069	5,067	7,744	11,194	9,183	6,599	5,767	6,255	6,795	5,556	81,597
1921	6,042	5,423	7,147	6,840	9,290	9,832	7,112	6,930	6,734	8,091	6,147	6,261	35,849
1922	5,940	6,139	8,093	7,875	10,262	11,384	10,121	10,669	9,419	10,452	8,893	8,477	107,724
1923	7,775	7,243	8,124	9,053	10,745	15,039	13,874	11,750	10,652	12,608	9,216	7,566	123,645
1924	8,135	10,358	10,267	10,601	11,949	12,337	14,204	12,943	11,516	10,264	8,341	9,109	130,024
1925	9,100	8,398	9,513	9,740	11,249	14,032	13,853	14,171	11,254	11,582	9,801	8,436	131,129
1926	8,633	8,446	8,597	9,119	7,410	10,092	11,280	11,806	10,155	10,219	9,647	9,700	115,104
PHILADELPHIA													
Av. 1921–1925	1,093	1,052	1,255	1,216	1,655	2,166	2,179	1,945	1,888	2,013	1,393	1,065	18,920
1918	------	------	642	629	1,228	1,148	2,315	1,389	940	1,262	706	877	------
1919	539	881	1,529	1,654	1,965	2,226	2,152	1,704	1,740	2,887	2,930	1,185	21,392
1920	874	1,040	1,489	626	1,743	2,104	1,657	2,189	1,362	1,130	1,431	1,221	16,866
1921	1,116	1,064	1,280	1,396	2,223	2,602	2,491	2,311	2,086	1,920	1,369	1,094	20,952
1922	1,144	1,120	1,506	1,523	1,750	1,827	1,846	1,887	1,815	2,101	1,738	1,067	19,324
1923	964	982	1,236	1,297	1,361	1,915	2,114	2,000	1,972	2,217	1,310	995	18,363
1924	1,000	1,086	1,188	897	1,092	1,850	2,061	1,704	1,660	1,978	1,218	1,132	16,866
1925	1,239	1,009	1,067	969	1,847	2,635	2,383	1,825	1,905	1,848	1,331	1,037	19,095
1926	1,247	1,112	1,076	1,188	1,535	2,513	2,191	1,852	2,132	2,078	1,306	1,224	19,454
BOSTON													
Av. 1921–1925	641	587	735	925	1,187	2,057	2,056	1,452	1,368	1,470	1,097	762	14,336
1918	------	------	647	453	1,462	2,559	2,305	1,721	972	778	574	476	------
1919	351	517	1,100	1,088	2,000	2,374	2,898	2,091	1,422	1,859	1,231	791	17,722
1920	620	274	622	511	918	1,422	2,290	1,749	1,343	1,479	1,256	483	12,997
1921	435	574	691	685	978	2,503	1,701	1,173	1,262	1,456	1,249	501	13,208
1922	408	590	663	1,004	1,201	2,220	1,963	1,461	1,410	1,104	910	587	13,521
1923	828	436	947	1,029	1,195	2,074	2,304	1,936	1,165	1,777	1,302	921	15,914
1924	740	845	672	927	1,341	1,914	2,064	1,204	1,248	993	927	850	13,725
1925	792	492	704	980	1,218	1,576	2,248	1,484	1,755	2,018	1,097	950	15,314
1926	868	910	1,095	808	1,075	2,066	1,884	1,858	1,486	1,430	1,053	904	15,437
SAN FRANCISCO													
Av. 1921–1925	682	714	717	777	985	1,090	1,364	1,201	853	865	827	688	10,763
1918	------	------	------	------	------	------	693	1,372	785	935	651	764	------
1919	694	846	869	1,219	1,263	1,195	1,706	871	874	730	795	1,027	12,089
1920	935	810	935	981	1,012	1,002	964	601	936	852	564	611	10,203
1921	621	885	757	963	867	887	1,365	813	533	771	806	364	9,632
1922	503	634	464	697	886	963	902	1,147	877	800	551	733	9,157
1923	588	571	706	858	1,052	1,171	1,362	1,237	985	932	1,185	1,043	11,690
1924	725	944	1,046	700	1,039	1,234	1,579	1,103	837	911	714	650	11,482
1925	973	534	612	667	1,083	1,197	1,613	1,703	1,035	910	878	650	11,855
1926	850	530	811	1,146	1,267	1,630	1,517	1,298	1,177	828	622	859	12,530
TOTAL													
Av. 1921–1925	12,877	12,819	14,868	15,512	19,006	23,184	23,253	20,331	18,076	18,962	15,485	13,447	207,821
1918	------	------	------	------	------	------	20,536	16,112	12,383	13,796	10,398	11,292	------
1919	10,988	10,271	13,386	15,362	20,069	22,648	22,267	18,417	18,519	18,491	14,650	12,199	197,267
1920	11,094	9,655	13,918	8,583	16,140	21,874	19,797	16,416	12,831	12,924	13,802	11,633	168,667
1921	11,488	11,283	12,758	13,952	19,361	21,680	19,324	15,999	14,923	16,653	13,228	10,973	181,622
1922	10,734	11,258	14,789	15,565	19,146	22,770	20,211	19,806	17,463	18,323	15,699	14,071	199,835
1923	13,063	12,617	15,354	16,433	18,963	25,406	25,764	21,680	18,619	21,325	16,557	13,256	219,037
1924	13,890	16,092	16,540	16,175	19,030	22,041	25,143	19,996	18,855	17,479	14,884	14,922	215,056
1925	15,202	12,845	14,898	15,436	18,529	24,025	25,825	24,176	20,520	21,029	17,059	14,012	223,556
1926	14,853	13,568	15,055	15,531	14,972	21,777	21,973	20,736	18,784	18,699	15,954	15,986	207,868

Division of Statistical and Historical Research.
Compiled from records of the Division of Dairy and Poultry Products.

TABLE 391.—*Cheese: Gross receipts at six markets, by State of origin, 1921–1926*

[Thousand pounds—i. e., 000 omitted]

NEW YORK

State	1921	1922	1923	1924	1925	1926												
						Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
New York	22,413	21,770	16,909	14,478	14,107	11,180	1,002	780	851	905	859	1,247	1,035	823	759	1,030	908	981
Wisconsin	17,044	16,100	19,758	16,339	18,978	17,587	1,038	636	1,437	1,083	1,456	2,592	2,685	1,607	1,639	1,448	1,017	899
Illinois	7,061	6,997	8,535	8,382	7,211	7,406	589	458	478	629	361	969	694	656	693	885	519	475
Pennsylvania	1,623	1,181	955	618	1,105	745	106	123	196	106	43	52	77	24	5	6	3	4
Michigan	787	506	619	644	472	301	([1])	1	2	34	62	15	4	22	51	75	25	10
Ohio	773	632	321	136	374	363	35	27	4	3	2	([1])	24	26	22	90	66	64
Massachusetts	420	189	228	235	248	244	30	33	10	34	21	23	([1])	1	25	43	23	1
Indiana	187	182	277	581	2,075	5,653	315	422	394	336	592	360	488	622	585	448	548	543
Nebraska	144	23	4	240	48	76	------	------	------	------	25	27	------	------	([1])	24	------	------
Missouri	131	915	170	48	98	158	------	------	------	10	54	26	------	60	------	1	------	7
Minnesota	112	494	249	352	118	551	33	25	78	68	160	60	40	23	------	------	37	27
New Jersey	97	46	40	48	16	18	1	1	2	2	1	1	9	1	([1])	([1])	([1])	([1])
Iowa	57	94	206	295	777	346	51	81	15	7	34	60	33	50	([1])	31	------	34
Virginia	24	5	4	49	23	12	1	9	([1])	1	([1])	([1])	([1])	1	([1])	([1])	([1])	([1])
Tennessee	15	74	3	8	15	13	([1])	13	([1])	------	------	------	------	([1])	------	------	------	------
Vermont	14	97	305	79	273	47	------	------	([1])	1	9	36	------	([1])	1	([1])	------	([1])
Other States	625	215	414	172	85	78	1	1	2	21	1	2	8	1	1	1	38	1
Canada	454	1,189	428	255	140	585	53	10	7	30	5	6	4	5	3	67	142	253
Total	51,981	50,109	49,425	42,959	46,163	45,363	3,255	2,570	3,476	3,270	3,685	5,476	5,101	3,922	3,834	4,149	3,326	3,299

BOSTON

State	1921	1922	1923	1924	1925	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
New York	5,868	6,527	7,402	5,209	4,546	4,328	181	177	214	225	322	767	631	541	484	436	266	84
Wisconsin	3,294	3,091	3,392	4,317	7,787	6,229	369	357	396	290	508	791	804	648	621	565	419	461
Illinois	1,782	2,091	3,881	2,931	1,782	3,622	238	252	395	227	186	342	284	455	323	334	269	317
Vermont	1,444	471	623	736	432	413	8	14	4	16	30	80	73	131	5	1	48	3
Pennsylvania	132	136	183	181	206	152	16	35	61	25	2	1	------	([1])	1	------	1	10
Ohio	71	35	23	137	201	162	20	26	24	6	4	12	------	35	([1])	([1])	8	27
New Hampshire	55	75	50	41	6	5	([1])	([1])	1	([1])	1	1	([1])	------	2	------	------	([1])
Massachusetts	39	32	27	13	8	5	------	1	([1])	([1])	------	1	------	([1])	1	([1])	1	1
Indiana	36	66	28	1	47	60	23	([1])	------	------	14	23	------	([1])	------	------	------	------
Maine	35	17	38	5	4	114	12	([1])	([1])	15	------	------	2	([1])	2	46	37	------
Michigan	31	296	191	74	198	184	([1])	------	------	------	------	41	72	26	45	------	------	------
Other States	142	475	71	23	97	162	([1])	48	------	4	8	7	18	22	2	48	4	1
Canada	279	209	5	56	------	1	1	------	------	------	------	------	------	------	------	------	------	------
Total	13,208	13,521	15,914	13,724	15,314	15,437	868	910	1,095	808	1,075	2,066	1,884	1,858	1,486	1,430	1,053	904

CHICAGO

Wisconsin	76, 706	95, 656	110, 648	117, 439	119, 244	100. 676	7, 891	7, 905	7, 741	8, 176	6, 495	9, 135	10, 266	10, 785	8, 615	8, 645	7, 765	7, 257
Illinois	3, 102	4, 011	4, 497	3, 965	4, 592	3, 293	183	250	287	318	201	394	358	373	352	229	216	132
Minnesota	2, 687	1, 960	3, 177	2, 733	3, 108	3, 265	386	94	418	494	410	185	347	164	122	210	242	193
Michigan	1, 687	1, 415	729	1, 241	118	238		11	5	7	25	94	54	3	3	3	1	32
Montana	313	26	203	311	81													
Iowa	287	810	705	620	606	457	104	18	21	49	72	64	60	21	14	16	12	6
New York	221	2, 391	2, 429	1, 667	1, 282	2, 218	52	108	93	39	75	188	102	355	346	219	381	310
Kansas	166	3	51	30	45	72		(1)	(1)	(1)	57	13	1	(1)	(1)	(1)	(1)	1
Pennsylvania	163	308	289	158	115	112	6	15	9	4	4	3	6	9	7	15	4	30
California	113	57			9	94					2	(1)	25	2		1		64
Ohio	99	301	147	91	745	315	(1)	8	2	1	3	6	(1)	25	88	95	28	64
South Dakota	78	17	16	64	2	106		7								98		1
Missouri	56	222	83	188	65	43	1	1	2		28	1	1	(1)	6	3	(1)	(1)
Texas	32	9	15	2	38	35	(1)		2	2	(1)	(1)	(1)	28	(1)	1	1	1
Colorado	27	104	16	34	192	42	1		1	1	1			1	8	1	27	1
Indiana	16	22	66	50	49	93	4	28	4	6	6	6	13	5	14	2	3	2
Utah	11	8	14	7	8	2	(1)		1					1				
New Jersey		45	24	95	32													
Idaho		19	168	675	337	534												534
Other States	85	90	122	281	81	250	5	1	11	22	31	3	47	34	27	7	2	60
Canada		250	246	373	380	3, 259									553	674	1. 020	1, 012
Total	85, 849	107, 724	123, 645	130, 024	131, 129	115, 104	8, 633	8, 446	8, 597	9, 119	7, 410	10, 092	11, 280	11, 806	10, 155	10, 219	9, 647	9, 700

Wisconsin	8, 487	10, 638	8, 884	8, 003	10, 850	11, 428	578	534	389	598	630	1, 872	1, 538	1, 096	1, 455	1, 465	752	541
New York	7, 068	4, 660	4, 538	3, 655	3, 627	2, 630	233	185	273	140	406	212	195	206	131	192	177	280
Illinois	2, 557	2, 955	4, 126	4, 333	4, 073	4, 636	359	312	339	426	462	291	324	475	470	400	377	401
Pennsylvania	2, 041	517	245	240	84	63	32	1	1	3	8	4	8	3	1	1	(1)	1
Ohio	205	223	136	26	11	133	23	20		21			58	10	1			
New Jersey	121	14	36	3	3													
Indiana	100	95	142	95	201	122		33	31			58						
Michigan	45	115	131	199	111	188	21	26	9					41	51	20		20
Minnesota	41	1	54		68	184						76	64	21	23			
Iowa	3	25	44	164	37	1	(1)				1	(1)						
Other States	284	81	27	148	30	69	1	1	34		28		4					1
Total	20, 952	19, 324	18, 363	16, 866	19, 095	19, 454	1, 247	1, 112	1, 076	1, 188	1. 535	2, 513	2, 191	1, 852	2, 132	2, 078	1, 306	1, 224

[1] Not over 500 pounds.

TABLE 391.—*Cheese: Gross receipts at six markets, by State of origin, 1921–1926*—Continued

[Thousand pounds—i. e., 000 omitted]

SAN FRANCISCO

State	1921	1922	1923	1924	1925	1926 Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
California	4,800	3,416	3,650	2,603	2,316	2,123	116	97	155	277	321	385	214	169	125	76	101	78
Oregon	2,245	2,448	2,557	2,710	3,029	3,148	59	74	112	311	366	605	570	291	241	122	130	267
Wisconsin	1,064	1,353	1,979	2,216	1,987	2,694	253	112	163	233	215	150	329	340	400	210	140	149
Illinois	505	855	1,441	821	463	222	(1)	80	4		71	37	1	2	8	1		18
New York	388	314	249	310	307	529	76	13	38	20	34	32	15	75	88	57	45	36
Colorado	176	322	222	256	323	294	14	21	19	13	55	26	18	15	38	41	17	17
Washington	145	108	112	58	120	50	5	(1)	2	1	7	1	2	2	3	4	22	1
Idaho	139	222	1,039	2,262	2,835	2,858	245	121	268	263	197	275	244	378	239	309	104	215
Utah	24	10	17	76	164	387	27	11	50	27	(1)	59	55	26	29		62	41
Montana		56	338	5	64	79						54						25
Minnesota			63	152	154	94	27						67					
Other States	146	53	23	13	93	52	26	1		1	1	6	2	(1)	6	3	1	3
Total	9,632	9,157	11,690	11,482	11,855	12,530	850	530	811	1,146	1,267	1,630	1,517	1,298	1,177	823	622	859

LOS ANGELES

State	1921	1922	1923	1924	1925	1926 Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Idaho					3,922	4,441	330	188	462	403	501	540	427	390	387	293	250	270
Oregon					2,395	3,124	88	49	120	226	410	271	346	215	390	535	363	111
California					2,183	2,570	173	165	208	126	260	202	242	257	252	221	169	295
Wisconsin					2,017	2,579	165	102	125	203	502	395	359	246	191	28	144	119
Utah					354	536	6	6	26	125	54	21	87	50	97	31	3	30
Colorado					343	672	46	45	88	42	108	14	92	54	73	17	18	75
Illinois					233	264	(1)	1	66	11	121			38	27	(1)		(1)
Washington					106	199	41	13	11	4	5	14	(1)	2	54	4	25	26
Arizona					64	82	2	(1)	9	11	12	9	10	11	10	1	5	2
New York					48	289	(1)	6	13	31	41		59	40	72	19	3	5
Other States					235	304		24		26	7	53	97	32	26	39		
Total					11,900	15,060	851	599	1,128	1,208	2,021	1,519	1,719	1,335	1,579	1,188	980	933

Division of Statistical and Historical Research. Compiled from reports of the Division of Dairy and Poultry Products.

[1] Not over 500 pounds.

TABLE 392.—*American cheese: Cold-storage holdings, United States, 1915–1926* [1]

[Thousand pounds—i. e., 000 omitted]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
Average:												
1916–1920	40, 038	31, 287	22, 110	15, 286	11, 040	13, 060	29, 545	52, 425	66, 219	63, 736	55, 731	48, 060
1921–1925	38, 835	31, 016	24, 597	19, 103	18, 152	21, 505	39, 324	55, 240	63, 428	61. 751	56, 313	50, 330
1915									28, 575	24, 144	32, 428	31, 271
1916	28, 558	18, 908	13, 373	8, 443	6, 546	7, 301	16, 357	31, 569	46, 776	49, 579	45, 713	37, 080
1917	31, 855	22, 113	15. 560	9, 842	7, 928	11, 626	34, 159	67, 595	91, 545	90, 671	78, 087	75, 166
1918	66, 784	56, 298	37, 743	27, 965	17, 736	20, 395	30, 054	48, 804	55, 742	42, 065	33, 402	25, 625
1919	19, 823	15, 486	9, 837	6, 750	6, 027	12, 478	37, 501	62, 645	76, 661	81, 359	72, 889	62, 508
1920	53, 168	43, 631	34, 039	23, 431	16, 963	13, 502	29, 654	51, 512	60, 372	55, 007	48, 566	39, 921
1921	34, 115	25, 000	17, 477	14, 294	13, 466	17, 814	34, 948	41, 284	46, 635	45, 163	42, 969	34, 055
1922	27, 691	21, 430	15, 006	10, 745	10, 868	15, 481	33, 130	46, 580	53, 625	49, 473	40, 852	37, 291
1923	33, 617	26, 593	20, 693	14, 465	14, 077	17, 507	36, 834	55, 839	63, 960	62, 384	57, 927	55, 105
1924	49, 566	40, 506	35, 160	28, 294	26, 202	27, 172	45, 239	65, 864	76, 406	73, 153	67, 905	58, 705
1925	49, 187	41, 552	34, 647	27, 716	26, 147	29, 550	46, 468	66, 634	76, 512	78, 582	71, 913	66, 495
1926	58, 457	50, 339	42, 587	38, 041	35, 597	39, 346	54, 069	73, [illegible]	81, 297	77, 646	72, 491	63, 881

Cold Storage Report Section.

[1] The term "American cheese" is intended to cover only those varieties known as twins, flats, daisies, cheddars, longhorns, and square prints. It does not, therefore, include all kinds of cheese made in America.

TABLE 393.—*Cheese: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended December 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	10, 447	[1] 6	2, 359	11, 670	2, 546	3, 461	3, 402	657
Australia	360	799	[2] 1, 422	[2] 3, 788	[2] 357	[2] 10, 354	[3] 550	[3] 9, 549
Bulgaria	[4] 52	[1] 5, 972	34	1, 175	16	258	(5)	191
Canada	1, 054	167, 260	1, 900	116, 202	909	121, 466	10, 274	150, 743
Czechoslovakia			1, 999	3, 917	1, 671	5, 431	1, 777	8, 048
Denmark	1, 414	527	721	12, 038	673	19, 480	819	18, 783
Finland	478	2, 086	23	2, 944	36	5, 613	33	8, 421
Hungary			(5)	1, 160	1	1, 344	1, 923	1, 769
Italy	13, 308	60, 560	10, 228	50, 476	4, 156	74, 110	3, 868	86, 228
Netherlands	522	127, 379	873	136, 646	888	170, 352	1, 164	175, 711
New Zealand	3	55, 561	(5)	161, 444	19	178, 582	2	154, 196
Russia	3, 911	7, 011		[3] 199	[3] 58	[3] 303	[3] 289	[3] 14
Switzerland	7, 150	70, 075	2, 543	39, 046	4, 163	43, 776	3, 765	51, 726
Yugoslavia			[3] 118	9, 309	[3] 191	7, 439	[3] 273	[3] 4, 861
PRINCIPAL IMPORTING COUNTRIES								
Algeria	6, 592	138	7, 415	189	7, 547	174	7, 897	278
Austria			9, 847	317	10, 142	1, 189	7, 970	681
Austria-Hungary	12, 298	966						
Belgium	31, 771	354	39, 553	1, 039	37, 388	1, 633	38, 274	1, 794
Brazil	4, 178	[1] 1	254	3	646	1	1, 101	(5)
British India	1, 314		1, 006		1, 046	[3] 4	1, 157	
Cuba	4, 520	7	4, 995	3	5, 619	8		
Dutch East Indies	757		1, 242		1, 383		[6] 1, 102	
Egypt	8, 182	[7] 48	6, 007	122	5, 960	117	7, 157	155
France	19, 056	26, 880	45, 690	27, 908	32, 792	23, 891	40, 559	35, 689
Germany	48, 687	1, 967	24, 930	636	96, 702	1, 239	148, 699	2, 491
Irish Free State					2, 590	542	2, 823	483
Norway	663	377	1, 962	697	1, 106	737	1, 301	702
Spain	5, 032	53	5, 971	126	6, 599	87	5, 307	133
Sweden	946	41	4, 189	114	2, 210	266	1, 211	730
Tunis	1, 382	19	[3] 1, 031	[3] 40	1, 073	48	1, 185	10
Union of South Africa	4, 991	3	832	118	552	127	256	190
United Kingdom	257, 407	950	313, 280	946	318, 041	843	331, 500	1, 950
United States	46, 346	5, 142	64, 420	8, 331	59, 176	4, 299	62, 403	9, 190
Other countries	12, 596	3, 942	19, 120	3, 182	18, 239	3, 767	18, 453	7, 332
Total	535, 417	538. 124	573, 964	593, 785	624, 495	685, 941	706, 494	732, 705

Division of Statistical and Historical Research. Official sources except where otherwise noted. All cheese made from milk, including "cottage cheese."

[1] Four-year average.
[2] Year beginning July 1.
[3] International Yearbook of Agricultural Statistics.
[4] Three-year average.
[5] Less than 500 pounds.
[6] Java and Madura only.
[7] One year only.

TABLE 394.—*Cheese, No. 1 American fresh flats: Average wholesale price per pound, New York, 1910–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1914–1920	23	23	23	23	23	22	22	22	23	24	24	25	23
1921–1925	24	23	23	21	19	20	22	23	23				
1910	17	17	17	17	14	14	15	15	15	15	15	16	16
1911	15	15	14	14	11	11	12	12	14	14	15	16	14
1912	16	17	18	19	15	14	15	16	16	18	17	17	16
1913	17	17	16	15	13	14	14	15	16	16	16	16	15
1914	17	16	18	16	14	15	15	16	16	15	15	15	16
1915	15	16	16	16	17	15	15	13	14	15	16	17	15
1916	17	18	18	18	18	15	15	17	19	21	23	24	19
1917	24	25	26	26	26	23	24	23	25	25	23	24	24
1918	24	26	24	23	24	23	25	26	28	33	32	35	27
1919	35	30	32	31	32	32	33	31	31	31	32	32	32
1920	32	30	29	30	30	28	27	27	28	28	28	28	29
1921	24	21	25	22	17	16	19	21	21	22	21	21	21
1922	21	20	20	18	17	19	21	21	21				
1923	28	28	25	23	23	24	25	25	26	26	25		
1924	22	22	21	17	17	20	21	21	22	20	21	23	21
1925	24	24	24	23	21	23	24	25	25	26	27	27	24
1926		24	23	21	20	22	23	23	24	25	26		

Division of Statistical and Historical Research. January, 1910–February, 1919, compiled from Urner-Barry reports; subsequently from reports of Division of Dairy and Poultry Products.

TABLE 395.—*Oleomargarine: Production, 1920–1925*

[Thousand pounds—i. e., 000 omitted]

Product	1920		1921		1922		1923		1924		1925	
	Number factories reporting	Quantity produced	Number factories reporting	Quantity produced	Number factories reporting	Quantity produced	Number factories reporting	Quantity produced	Number factories reporting	Quantity produced	Number factories reporting	Quantity produced
Oleomargarine (uncolored):												
Animal and vegetable oil	51	161,636	55	103,962	57	104,285	51	121,271	53	119,641	47	109,588
Exclusively vegetable oil	71	190,280	71	99,265	69	74,127	60	93,970	55	97,871	48	108,490
Exclusively animal oil	7	3,843	3	624	3	303	4	450	3	413	2	74
Oleomargarine (colored):												
Animal and vegetable oil	36	8,951	36	5,960	36	4,976	34	7,078	32	7,847	24	8,243
Exclusively vegetable oil	34	5,359	35	2,026	33	1,384	27	2,808	31	3,259	28	4,215
Exclusively animal oil	3	94	2	30	1	1						
Total oleomargarine (colored and uncolored)		370,163		211,867		185,076		225,577		229,031		230,611

Division of Dairy and Poultry Products. Compiled from reports made by manufacturers.

TABLE 396.—*Oleomargarine production and consumption in the United States, 1909–1926*

Year ended June 30	Production	Stocks, beginning of year	Exports	Stocks, end of year	Consumption	
					Total	Per capita
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1909	92, 282, 815	692, 225	2, 889, 058	748, 318	89, 337, 664	0. 99
1910	141, 862, 280	748, 318	3, 418, 632	1, 165, 446	138, 026, 520	1. 51
1911	121, 162, 795	1, 165, 446	3, 794, 939	942, 440	117, 590, 862	1. 26
1912	128, 601, 058	942, 440	3, 627, 425	1, 249, 246	124, 666, 822	1. 32
1913	145, 227, 862	1, 249, 246	2, 967, 582	1, 650, 897	141, 858, 629	1. 48
1914	144, 021, 276	1, 650, 897	2, 532, 821	1, 261, 245	141, 878, 107	1. 46
1915	145, 810, 048	1, 261, 245	5, 252, 183	1, 661, 559	140, 157, 551	1. 42
1916	152, 509, 913	1, 661, 559	5, 426, 221	1, 992, 726	146, 752, 525	1. 47
1917	233, 170, 111	1, 992, 726	5, 651, 267	2, 988, 197	226, 523, 373	2. 23
1918	326, 528, 839	2, 988, 197	6, 309, 896	3, 577, 733	319, 629, 407	3. 11
1919	359, 216, 571	3, 577, 733	18, 570, 409	2, 562, 597	341, 661, 307	3. 28
1920	391, 283, 143	2, 562, 597	20, 952, 180	4, 110, 174	368, 783, 386	3. 49
1921	281, 081, 514	4, 110, 174	6, 219, 165	1, 979, 543	276, 992, 980	2. 58
1922	190, 950, 373	1, 979, 543	2, 143, 336	2, 265, 895	188, 520, 685	1. 73
1923	209, 182, 188	2, 265, 895	3, 763, 935	2, 647, 297	205, 036, 851	1. 85
1924	239, 698, 749	2, 647, 297	1, 395, 996	2, 607, 346	238, 342, 704	2. 11
1925	215, 402, 538	2, 607, 346	887, 482	2, 720, 438	214, 401, 964	1. 87
1926	248, 046, 818	2, 720, 438	1, 256, 251	2, 941, 797	246, 569, 208	2. 12

Division of Statistical and Historical Research. Production and stocks from Bureau of Internal Revenue. Exports from Bureau of Foreign and Domestic Commerce.

TABLE 397.—*Oleomargarine: Materials used in manufacture, 1916–1925*

[Thousand pounds—i. e., 000 omitted]

Material	Year beginning July—									
	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Oleo oil	96, 652	96, 378	97, 464	89, 842	49, 676	40, 980	46, 645	52, 265	44, 102	47, 418
Coconut oil	19, 763	61, 773	69, 640	80, 784	103, 112	57, 394	65, 656	83, 059	79, 449	98, 307
Cottonseed oil	63, 652	36, 454	37, 846	39, 450	18, 533	15, 420	18, 757	20, 640	20, 966	25, 608
Milk	24, 410	61, 128	68, 000	76, 000	79, 716	53, 939	59, 835	69, 090	61, 924	72, 662
Peanut oil	10, 498	21, 593	38, 764	48, 346	16, 332	11, 625	6, 922	5, 656	4, 392	5, 257
Salt	6, 115	18, 279	21, 432	24, 864	25, 365	16, 262	17, 998	20, 593	18, 725	20, 593
Oleo stearine	2, 494	3, 427	2, 456	2, 132	4, 858	4, 574	4, 815	5, 317	5, 250	5, 314
Neutral lard	42, 401	45, 702	45, 764	38, 456	29, 268	27, 057	29, 568	32, 210	25, 674	25, 172
Oleo stock	3, 458	7, 526	6, 342	5, 801	2, 065	2, 143	2, 322	2, 756	3, 183	3, 082
Butter	3, 303	4, 548	5, 680	6, 845	1, 499	1, 107	1, 576	1, 900	1, 509	2, 330
Corn oil	859	60	40	35	926			457	196	174
Soy-bean oil					461					1
Edible tallow					233			24	111	93
Mustard-seed oil					110			38	27	34
Coloring					26	11	11	26	38	41
Miscellaneous	149	14	11	14	9, 776	3, 417	2, 918	432	688	1, 374
Total	273, 754	356, 882	393, 439	412, 572	341, 956	233, 929	257, 023	294, 463	266, 234	307, 460

Division of Statistical and Historical Research. 1916–1919, Institute of Margarin Manufacturers; 1920–1925, Annual reports of the Bureau of Internal Revenue.

Table 398.—*Oleomargarine: Production in the United States, by months, 1909–1925*

[Thousand pounds—i. e., 000 omitted]

COLORED

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Average:													
1909–1913	416	441	464	527	555	609	585	554	617	565	498	399	6,230
1914–1920	698	755	693	785	850	840	881	881	1,0[illegible]	1,039	865	628	10,003
1909	381	433	487	519	521	634	525	518	619	595	542	403	6,177
1910	414	433	469	473	610	587	524	501	606	463	389	362	5,831
1911	359	454	393	477	539	594	663	630	614	588	538	387	6,236
1912	449	394	439	530	501	616	602	618	638	701	586	446	6,520
1913	477	493	532	635	606	615	610	503	608	477	433	395	6,384
1914	422	509	488	480	472	583	807	1,082	1,131	598	526	497	7,595
1915	472	436	443	548	557	597	560	569	684	677	652	554	6,749
1916	447	569	643	719	741	759	703	628	742	738	731	592	8,012
1917	496	512	573	677	542	521	508	471	615	582	587	511	6,595
1918	408	433	538	608	552	747	1,111	1,642	2,243	2,716	1,930	921	13,849
1919	1,705	1,807	681	1,087	1,719	1,626	1,540	960	1,250	1,139	1,114	996	15,624
1920	934	1,019	1,484	1,378	1,368	1,046	936	816	950	823	518	328	11,600
1921	424	500	577	692	693	656	556	482	595	498	513	418	6,604
1922	415	420	488	565	670	790	772	801	917	854	906	662	8,260
1923	644	710	864	956	1.009	1,096	1,104	1,157	1,229	1,102	872	805	11,548
1924	830	777	945	989	878	1,074	1,008	912	1,083	1,039	928	817	11,280
1925	866	866	956	1,242	1,154	1,296	1,179	1,195	1,272	1,148	1,007	1,000	13,181

UNCOLORED

Year beginning July	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Average:													
1909–1913	6,384	7,935	10,503	12,592	12,953	14,009	13,945	12,283	12,048	10,843	9,114	7,336	129,945
1914–1920	15,458	16,874	21,282	26,565	24,718	25,904	24,769	21,867	24,013	21,602	21,317	15,570	259,939
1909	5,499	6,386	9,809	12,497	13,313	15,314	15,516	12,639	13,456	12,747	10,175	8,334	135,685
1910	6,902	9,307	12,702	12,627	13,823	13,002	10,885	8,936	9,676	6,866	5,424	5,182	115,332
1911	4,788	6,701	7,816	9,245	11,228	12,652	15,639	13,738	11,654	10,988	10,629	7,287	122,365
1912	6,785	8,526	9,397	13,807	12,623	14,802	13,1[illegible]9	13,213	13,139	13,892	11,046	8,288	138,707
1913	7,947	8,754	12,790	14,786	13,777	14,277	14,485	12,888	12,317	9,724	8,305	7,587	137,637
1914	7,847	9,502	12,036	13,120	13,310	14,063	12,516	12,371	12,910	10,785	10,319	9,436	138,215
1915	8,711	9,183	10,491	12,394	11,782	13,380	11,993	13,034	15,243	13,974	13,746	11,830	145,761
1916	8,948	11,272	15,516	19,246	21,899	23,287	18,272	19,593	22,128	22,740	24,314	17,943	225,158
1917	16,490	19,519	26,181	33,374	29,009	30,227	32,496	35,855	31,512	22,912	23,410	18,949	319,934
1918	19,888	17,959	28,428	43,543	32,434	36,662	40,166	19,741	27,431	31,448	29,135	18,533	345,368
1919	22,700	25,168	26,424	34,357	35,502	39,005	35,312	31,701	36,337	30,667	34,760	23,726	375,659
1920	23,625	25,516	29,899	29,918	29,089	24,705	22,630	20,773	22,532	18,685	13,537	8,572	269,481
1921	10,581	16,612	16,920	20,588	17,985	17,754	15,610	14,139	15,375	13,432	13,356	11,994	184,346
1922	11,866	12,623	13,684	17,380	18,615	20,269	20,105	17,889	20,137	18,083	16,690	13,582	200,923
1923	12,633	15,966	18,258	21,521	21,473	21,052	23,597	21,805	21,189	19,359	16,800	14,497	228,150
1924	14,689	15,285	18,324	19,151	16,188	19,182	18,171	16,317	18,046	17,629	16,671	14,469	204,122
1925	14,912	16,360	18,377	24,703	23,247	22,882	21,409	19,526	21,155	18,645	16,710	16,940	234,866

Division of Statistical and Historical Research. Compiled from annual reports of the Bureau of Internal Revenue.

Table 399.—*Oleomargarine: Monthly average wholesale price per pound, Chicago, 1914–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
1914–1920	24.6	24.4	24.1	24.4	25.0	25.0	24.9	24.9	25.3	25.4	26.1	26.1	25.0
1921–1925	22.3	21.7	21.3	20.7	20.4	20.1	20.5	21.3	21.4	21.6	22.0	22.3	21.3
1914	18.0	18.0	18.0	17.0	17.0	17.0	17.0	17.0	18.0	18.0	18.0	18.0	17.6
1915	18.0	18.0	18.0	18.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.3
1916	17.0	17.0	17.0	18.0	19.0	19.0	19.0	19.0	19.0	20.0	22.0	24.0	19.2
1917	22.5	22.5	22.5	24.5	25.5	25.5	25.5	25.5	26.5	28.5	28.5	28.5	25.5
1918	28.5	28.5	28.5	28.5	28.5	28.5	28.5	29.5	29.5	30.5	32.5	32.5	29.5
1919	32.5	32.5	31.5	31.5	34.5	35.5	35.5	35.5	36.5	34.5	35.5	35.5	34.3
1920	35.5	34.4	33.5	33.5	33.5	32.6	31.7	30.5	30.5	29.5	29.5	27.0	31.8
1921	24.9	23.6	22.2	20.5	19.8	18.5	18.9	20.5	20.5	20.5	20.1	19.5	20.8
1922	19.0	17.5	17.5	17.5	17.5	17.5	18.2	18.5	18.5	18.5	19.2	20.5	18.3
1923	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	21.0	21.5	22.2	22.5	20.9
1924	22.5	22.5	21.9	20.5	20.5	20.5	21.2	22.5	22.5	23.0	24.0	24.5	22.2
1925	24.5	24.5	24.5	24.5	23.9	23.5	23.7	24.5	24.5	24.5	24.5	24.5	24.3
1926	24.5	24.3	23.5	23.3	22.5	22.5	22.5	22.5	22.5	22.5	21.8	21.5	22.8

Division of Statistical and Historical Research. Compiled from Bureau of Labor Statistics Wholesale Price bulletins.

CATTLE DISEASES

Table 400.—*Cattle: Tuberculin testing under accredited-herd and area plans, 1917–1926*

Year ended June 30	Cattle tested					Modified accredited areas	Herds		
	Accredited-herd plan	Area plan	Total	Reactors found	Per cent reactors		Accredited	Passed 1 test	Under supervision
1917	20, 101		20, 101	645	3. 2				
1918	134, 143		134, 143	6, 544	4. 9		204	883	
1919	329, 878		329, 878	13, 528	4. 1		578	5, 652	
1920	700, 670		700, 670	28, 709	4. 1		2, 588	10, 064	
1921	1, 366, 358		1, 366, 358	53, 768	3. 9		4, 831	33, 215	71, 806
1922	1, 722, 209	[1] 662, 027	2, 384, 236	82, 569	3. 5		8, 015	111, 719	140, 376
1923	1, 695, 662	1, 765, 187	3, 460, 849	113, 844	3. 3		12, 310	150, 748	187, 915
1924	1, 865, 863	3, 446, 501	5, 312, 364	171, 559	3. 2	38	19, 747	216, 737	305, 809
1925	2, 008, 526	4, 991, 502	7, 000, 028	214, 491	3. 1	51	24, 110	392, 740	414, 620
1926	1, 989, 048	6, 661, 732	8, 650, 780	323, 084	3. 7	114	24, 009	382, 674	435, 840
Total	11, 832, 458	17, 526, 949	29, 359, 407	1, 008, 741	3. 4	203	96, 392	1, 304, 432	1, 556, 366

Bureau of Animal Industry.

[1] Testing during 6 months.

Table 401.—*Cattle: Tick eradication progress and status of the work June 30, 1926*

State	Counties quarantined July 1, 1906	Counties quarantined June 30, 1926	Released counties June 30, 1926			Cattle dipped year ended June 30, 1926	
			Tick free	With one or more infested herds	Total counties released	Herds	Cattle
Alabama	67	5	49	13	62	291, 644	1, 963, 377
Arkansas	75	34	31	10	41	222, 391	948, 348
California	15	0	15	0	15	0	0
Florida	67	54	7	6	13	99, 682	943, 048
Georgia	158	0	149	9	158	43, 960	494, 582
Kentucky	2	0	2	0	2	0	0
Louisiana	64	41	4	19	23	141, 438	1, 639, 366
Mississippi	82	23	47	12	59	58, 195	645, 469
Missouri	4	0	4	0	4	0	0
North Carolina	73	0	65	8	73	56, 052	174, 264
Oklahoma	61	4	52	5	57	16, 125	157, 150
South Carolina	46	2	40	4	44	93, 647	413, 978
Tennessee	42	0	42	0	42	22	164
Texas	198	94	69	35	104	368, 937	9, 296, 317
Virginia	31	4	25	2	27	2, 688	7, 222
Total	985	261	601	123	724	1, 394, 781	16, 683, 285

Bureau of Animal Industry.
More than 16,000 vats were in use for official dipping during the year.

TABLE 402.—*Cattle: Status of tuberculosis eradication work, by States, June 30, 1926*

State	Accredited herds	Passed one test, herds	Under supervision		Eradication from areas [1]					Total tuberculin tests, 1917–June 30, 1926		
			Herds	Cattle	Modified accredited counties	Additional counties having completed one or more tests of all cattle	Counties intensively engaged in testing cattle	Total counties engaged	Total cattle tested [2]	Total cattle	Reactors	
											Number	Per cent
Alabama	217	3,384	4,168	43,969	0	0	3	3	751	221,319	1,931	0.9
Arizona	22	6,533	7,818	104,887	0	0	11	11	35,404	76,380	2,199	2.9
Arkansas	26	2,896	3,945	18,877	0	0	0	0	0	66,198	2,710	4.1
California	84	3,243	3,480	185,895	2	0	1	3	46,896	232,905	2,387	1.0
Colorado	89	1,772	2,111	20,688	0	0	2	2	8,917	36,564	947	2.6
Connecticut	912	819	2,462	46,498	0	0	0	0	0	235,864	23,848	10.1
Delaware	1,206	2,296	4,101	17,742	0	0	1	1	(3)	83,106	8,206	9.9
District of Columbia	26	253	286	1,262	0	1	0	1	221	11,274	119	1.1
Florida	395	6,227	7,056	93,245	3	1	0	4	3,037	187,478	2,704	1.4
Georgia	39	9,769	10,679	148,341	0	2	0	2	11,932	172,586	2,610	1.5
Idaho	70	23,390	26,567	260,121	6	1	10	17	55,269	404,733	3,249	0.8
Illinois	1,597	93,734	104,086	934,463	1	0	65	66	669,984	1,906,613	115,303	6.0
Indiana	17,650	65,109	90,621	619,490	6	11	21	38	240,851	1,123,152	20,945	1.9
Iowa	6,609	69,085	124,219	2,173,325	19	7	26	52	1,097,795	3,343,954	94,670	2.8
Kansas	1,055	29,419	31,175	361,790	13	1	0	14	137,840	595,196	7,197	1.2
Kentucky	53	59,399	59,534	377,665	0	28	10	38	82,128	405,406	4,972	1.2
Louisiana	31	4,046	4,331	53,855	0	0	0	0	0	188,014	4,796	2.5
Maine	4,036	16,929	21,046	154,170	1	0	15	16	22,536	364,797	5,309	1.5
Maryland	2,247	8,324	14,329	105,370	0	0	6	6	77,031	384,132	31,367	8.2
Massachusetts	422	912	2,177	29,940	0	0	0	0	0	149,824	22,904	15.3
Michigan	122	88,689	94,612	734,059	27	7	14	48	439,156	1,747,518	37,790	2.2
Minnesota	7,534	21,341	31,566	642,905	4	6	0	10	458,045	1,789,190	48,512	2.7
Mississippi	143	2,066	2,317	37,801	0	4	0	4	(4)	176,366	914	0.5
Missouri	921	56,314	59,658	551,538	3	0	3	6	17,913	773,171	6,716	0.9
Montana	68	22,092	22,876	384,223	(4)	3	1	4	7,732	556,110	5,801	1.0

Nebraska	121	36,494	38,153	492,374	9	8	9	26	383,614	1,039,217	17,020	1.6
Nevada	12	2,360	3,754	83,849	0	0	12	12	12,460	89,016	1,620	1.8
New Hampshire	2,263	2,143	4,525	52,821	0	0	5	5	22,067	187,080	13,098	7.0
New Jersey	942	1,842	3,048	19,129	0	0	0	0	0	194,850	14,531	7.5
New Mexico	13	3,509	3,797	38,700	0	0	15	15	6,924	40,663	191	0.5
New York	20,802	35,671	72,564	800,635	2	4	37	43	560,309	2,079,944	225,033	10.8
North Carolina	256	195,704	209,138	566,878	62	0	13	75	99,131	582,953	3,472	0.6
North Dakota	4,018	28,688	36,703	651,676	14	0	11	25	175,522	1,012,435	15,381	1.5
Ohio	818	70,882	77,590	535,546	5	7	25	37	298,932	912,180	36,865	4.0
Oklahoma	229	88	341	12,776	0	0	0	0	0	158,148	3,514	2.2
Oregon	1,203	79,410	80,691	639,495	3	7	10	20	143,873	670,904	9,418	1.4
Pennsylvania	4,204	65,436	79,400	813,345	4	0	38	42	323,699	1,114,452	61,529	5.5
Rhode Island	38	43	162	3,257	0	0	0	0	0	14,371	1,797	12.5
South Carolina	177	10,329	10,571	43,438	0	0	2	2	5,468	125,073	1,257	1.0
South Dakota	579	5,329	6,226	137,065	1	2	0	3	106,831	315,326	7,904	2.5
Tennessee	231	19,386	19,778	124,988	3	0	1	4	36,208	300,108	2,110	0.7
Texas	265	79	404	21,605	0	0	0	0	0	211,858	2,485	1.2
Utah	97	10,331	11,310	89,917	1	1	15	17	64,377	272,041	2,921	1.1
Vermont	3,991	2,878	8,690	146,381	(6)	0	0	0	19,786	618,328	31,069	5.0
Virginia	1,979	6,113	8,356	91,799	0	2	1	3	10,880	407,569	10,258	2.5
Washington	105	43,930	47,281	464,260	0	3	29	32	133,399	615,129	14,053	2.3
West Virginia	772	10,924	11,725	90,159	2	0	2	4	26,921	203,428	3,287	1.6
Wisconsin	7,698	68,159	79,539	1,221,643	7	26	13	46	817,393	2,850,786	70,636	2.5
Wyoming	5	6,663	7,380	87,490	0	0	0	0	0	106,799	909	0.9
Indian schools [7]									0	413	27	6.5
Purebred herds in United States [7]									0	4,486	157	3.5
Total	96,392	1,304,432	1,556,366	15,131,345	198	132	427	757	6,661,732	29,359,407	1,008,741	3.4

Bureau of Animal Industry.

[1] Accredited-herd work begun 1917; area work, 1921.
[2] Includes area work in units smaller than counties.
[3] Record of number of cattle included in accredited-herd work figures.
[4] No testing in 1926.
[5] Part of one county.
[6] Four towns.
[7] Testing in 1917 before work was organized by States.

TABLE 403.—*Swine, including pigs: Estimated number and value on farms, by States, January 1, 1925–1927*

State	Number, Jan. 1			Value per head, Jan. 1			Total value, Jan. 1		
	1925	1926	1927 [1]	1925	1926	1927	1925	1926	1927 [1]
	Thousands	*Thousands*	*Thousands*	*Dollars*	*Dollars*	*Dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Maine	56	60	64	18.50	18.50	19.00	1,036	1,110	1,216
New Hampshire	18	19	20	18.00	19.00	18.00	324	361	360
Vermont	45	44	48	14.00	18.00	19.00	630	792	912
Massachusetts	60	67	68	17.00	19.00	18.00	1,020	1,273	1,224
Rhode Island	4	4	4	20.00	20.00	21.00	80	80	84
Connecticut	18	18	20	22.00	23.00	21.00	396	414	420
New York	259	249	284	17.00	19.50	18.50	4,403	4,856	5,254
New Jersey	56	56	60	17.50	19.50	21.00	980	1,092	1,260
Pennsylvania	734	683	731	16.00	19.00	19.00	11,744	12,977	13,889
Ohio	2,440	2,489	2,439	12.20	15.00	17.00	29,768	37,335	41,463
Indiana	3,100	2,820	2,764	11.90	15.70	17.00	36,890	44,274	46,988
Illinois	4,725	4,442	4,442	13.60	16.50	17.00	64,260	73,293	75,514
Michigan	855	727	749	14.00	16.20	17.50	11,970	11,777	13,108
Wisconsin	1,580	1,660	1,594	13.00	16.60	17.00	20,540	27,556	27,098
Minnesota	3,600	3,456	3,525	14.00	17.50	17.50	50,400	60,480	61,688
Iowa	9,633	9,633	9,530	15.00	17.00	17.50	144,495	163,761	166,775
Missouri	3,864	3,671	3,708	9.30	13.30	15.50	35,935	48,824	57,474
North Dakota	784	682	635	12.50	16.50	16.50	9,800	11,253	10,478
South Dakota	2,760	2,300	2,183	13.20	16.50	17.00	36,432	37,950	37,111
Nebraska	4,818	4,700	4,512	13.20	17.20	17.50	63,598	80,840	78,960
Kansas	2,467	2,220	2,109	12.00	14.50	15.50	29,604	32,190	32,690
Delaware	24	21	24	14.00	16.00	19.50	336	336	468
Maryland	188	179	192	12.90	14.90	16.00	2,425	2,667	3,072
Virginia	584	531	558	10.70	11.70	13.00	6,249	6,213	7,254
West Virginia	184	180	189	12.00	14.80	15.00	2,208	2,664	2,835
North Carolina	894	832	849	12.00	13.10	12.80	10,728	10,899	10,867
South Carolina	580	452	429	11.40	11.10	12.00	6,612	5,017	5,148
Georgia	1,275	1,109	1,164	9.00	9.00	9.00	11,475	9,981	10,476
Florida	498	458	485	6.50	7.00	8.00	3,237	3,206	3,880
Kentucky	932	839	940	9.00	12.40	13.00	8,388	10,404	12,220
Tennessee	1,035	880	968	9.00	11.80	13.00	9,315	10,384	12,584
Alabama	845	776	854	9.40	9.40	10.00	7,943	7,294	8,540
Mississippi	729	678	744	8.40	10.10	10.70	6,124	6,848	7,961
Arkansas	857	823	864	8.00	9.10	9.50	6,856	7,489	8,208
Louisiana	528	496	511	8.40	9.00	9.50	4,435	4,464	4,854
Oklahoma	969	736	777	9.40	11.80	14.50	9,109	8,685	11,266
Texas	1,250	1,000	1,250	10.00	12.20	14.80	12,500	12,200	18,500
Montana	280	250	240	12.00	15.00	15.20	3,360	3,750	3,648
Idaho	325	276	318	10.50	14.00	16.00	3,412	3,864	5,088
Wyoming	102	90	95	10.50	14.80	15.50	1,071	1,332	1,472
Colorado	493	443	408	11.00	14.30	16.00	5,423	6,335	6,528
New Mexico	59	47	54	11.00	13.00	14.30	649	611	772
Arizona	19	18	18	11.00	13.00	16.00	209	234	288
Utah	64	60	75	11.50	14.00	15.00	736	840	1,125
Nevada	25	22	26	12.00	15.00	15.00	300	330	390
Washington	198	168	185	13.00	15.70	17.00	2,574	2,638	3,145
Oregon	223	223	245	11.00	15.00	16.00	2,453	3,345	3,920
California	532	468	585	10.20	15.20	17.00	5,426	7,114	9,945
United States	55,568	52,055	52,536	12.38	15.21	15.96	687,858	791,632	838,420

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 404.—*Swine: Number in countries having 150,000 or over, pre-war and years 1921 to 1926*

[Thousands—i. e., 000 omitted]

Country	Month of estimate	Average pre-war [1]	1921	1922	1923	1924	1925	1926
NORTH AMERICA, CENTRAL AMERICA, AND WEST INDIES								
Canada	June	3,350	3,905	3,916	4,405	5,069	4,426	4,471
United States [2]	January	61,865	58,711	59,355	68,447	65,937	55,568	[3] 52,055
Mexico	June	[4] *811*			[5] 1,609	[5] 760		2,693
Guatemala		188	48	96	32	57	53	92
Salvador		220						
Dominican Republic	May		*674*	843	927	1,020		
Total North America, Central America, and West Indies comparable all periods		65,403	62,664	63,367	72,88[illegible]	71,063	60,047	56,618
Estimated total [6]		67,580	65,180	66,000	76,250	73,660	62,550	
SOUTH AMERICA								
Colombia		711				1,338		
Venezuela		195	512	512				
Peru	February–April			469	429			
Chile		172		263			247	
Brazil	September	18,401	[7] *16,169*					
Uruguay		[8] *180*	[9] *304*			251		
Argentina	December [10]	[11] *2,901*	(11)	(11)	*1,487*			
South America, estimated total [6]		23,162	Estimated average,[1] 1921–1925, 20,640					
EUROPE								
England and Wales	June	2,390	2,505	2,299	2,612	3,228	2,644	2,200
Scotland	do	150	145	151	186	199	154	146
Ireland	do	1,261	977	1,037	1,352	1,127	844	1,043
Norway [12]	do	[13] 334	127	200	237	249	253	303
Sweden	do	1,023	[7] 1,011					
Denmark	July	2,715	1,430	1,899	2,855	2,868	2,517	3,034
Holland	May–June	1,305	1,519					
Belgium	December [10]	1,533	977	976	1,139	1,176	1,139	1,152
France	do. [10]	7,529	4,941	5,166	5,196	5,406	5,802	5,793
Spain	do. [10]	2,544	4,229	5,152	4,229	4,728	4,160	5,267
Portugal		[14] *1,111*	[7] *921*				1,117	
Italy	March–April	2,685	[15] 2,509					
Switzerland	April	*570*	*640*					635
Germany	December [10]	22,533	14,179	15,818	14,678	[16] 17,308	16,895	[17] 16,200
Austria	do. [10]	1,932	1,326		*1,473*			

[1] Average for 5-year period if available; otherwise for any year or years within this period except as otherwise stated. In countries having changed boundaries the figures are estimates for one year only of numbers within present boundaries. For the pre-war average the years immediately preceding the war have been used.

[2] Revised estimates of Division of Crop and Livestock Estimates 1921-1926. These figures are made on the basis of census figures of 1920 and 1925, of annual assessment data and other information. The estimates prepared in the Bureau of Animal Industry by adjustment of the census figures to a Jan. 1 basis and including all animals in towns and villages as well as on farms and ranges are as follows. Average, 59,300,000; 1921, 58,600,000; 1922, 60,900,000; 1923, 71,500,000; 1924, 69,100,000; 1925, 56,700,000.

[3] The number of swine on Jan. 1, 1927, is officially estimated at 52,536,000.

[4] Year 1902.

[5] Incomplete.

[6] These totals include interpolations for a few countries not reporting each year and rough estimates for some others.

[7] Year 1920.

[8] Year 1908.

[9] Year 1916.

[10] Countries reporting as of December have been considered as of Jan. 1 of the following year—i. e., figures for number of swine in France as of Dec. 31, 1920, has been put in 1921 column.

[11] Pre-war figure census for June, 1914. Annual official estimates for 1921 and 1922 are as follows: 1921, 3,237,000, and 1922, 3,221,000. As the 1922 census shows a large decrease compared with 1914, these figures have not been used in the table.

[12] Number in rural communities.

[13] September.

[14] Year 1906.

[15] Year 1918. Estimated for present boundaries. The number within former boundaries on Apr. 6, 1918, amounted to 2,338,926.

[16] No census was made in December, 1923, which estimate would have been considered as of January, 1924, in this table, as explained in the note 10, so the figure for October, 1923 has been used.

[17] The number on Dec. 1, 1926, is officially estimated at 19,412,000. This would be placed in the 1927 column, as explained in the note 10. This column has not been added, as so few estimates are available as yet.

TABLE 404.—*Swine: Number in countries having 150,000 or over, pre-war and years 1921 to 1926*

[Thousands—i. e., 000 omitted]

Country	Month of estimate	Average pre-war [1]	1921	1922	1923	1924	1925	1926
EUROPE—continued								
Czechoslovakia	December [10]	2,516	2,201			[18] 2,580		2,539
Hungary	April	3,322		2,473	2,133	2,458	2,633	2,520
Yugoslavia	January	3,956	*3,373*	2,887	2,497	2,516		
Greece		346	404	407	334			
Bulgaria	December [10]	*546*	*1,090*				574	
Rumania	do.[10]	3,262	2,514	3,160	3,147	2,925	3,133	
Poland		5,231	5,425			5,500		
Lithuania		1,358	1,343	1,514	1,697	1,564	1,488	
Latvia	June	557	482	402	487	458	497	521
Estonia		252	261	272	339	285	339	333
Finland	September	422	375	378	382	376		
Russia	Summer	11,250	10,423	6,738	8,104	15,125	14,203	
Total Europe, comparable all periods		41,798	30,253	33,372	33,310	37,032	35,244	35,992
Estimated total [6]		82,770	67,890	67,850	68,810	80,460	76,900	
AFRICA								
Union of South Africa		*1,082*	*915*	*941*	*914*	*778*	*801*	
Madagascar	February	600	406	406	314			
Total Africa comparable pre-war to 1925		1,082	915	941	914	778	801	
Estimated total [6]		2,190	Estimated average,[1] 1921-1925, 1,870					
ASIA								
Russia		2,037	[19] 2,170	[19] 1,039	[19] 1,394	2,547	[20] 2,692	
China (includes Manchuria)		76,819						
Japan	December [10]	297	528	500	512	668	743	
Chosen	do.[10]	629	977	1,011	1,101	1,172	1,130	
Formosa	do.[10]	1,293	1,303	1,281	1,267	1,318	1,341	
Siam		749	864					
Straits Settlements		139	267					
Philippine Islands	December [10]	1,763	3,639	4,477	5,241	7,525	7,887	
Dutch East Indies (outer possessions)	do.[10]		737	805	808			
Total Asia comparable pre-war to 1925		6,019	8,617	8,308	9,515	13,230	13,793	
Estimated total [6]		84,740	Estimated average,[1] 1921-1925, 89,690					
OCEANIA								
Australia	December [10]	910	764	960	986	898	980	
New Zealand	January	*349*	350	384	401	414	433	473
Total Oceania comparable all periods		349	350	384	401	414	433	473
Estimated totals [6]		1,280	1,130	1,370	1,410	1,330	1,430	
World total comparable all periods		107,550	93,267	97,123	106,256	108,509	95,724	93,083
Estimated world total [6]		261,720	Estimated average,[1] 1921-1925, 254,660					

Division of Statistical and Historical Research. Census returns are in italics; other returns are in roman.

[1] Average for 5-year period if available; otherwise for any year or years within this period except as otherwise stated. In countries having changed boundaries the figures are estimated for one year only of numbers within present boundaries. For the pre-war average the years immediately preceding the war have been used.

[6] These totals include interpolations for a few countries not reporting each year and rough estimates for some others.

[10] Countries reporting as of December have been considered as of Jan. 1 of the following year—i. e., figures for number of swine in France as of Dec. 31, 1920, has been put in 1921 column.

[18] Unofficial.

[19] Includes 102,000 reported in Turkestan and Azerbaijan (part of Transcaucasia) in 1920. Excluding this territory, the numbers are as follows: 1921, 2,068,000; 1922, 936,000; 1923, 1,291,000.

[20] Includes 469,500 reported in Turkestan and Transcaucasia in 1924. Excluding this territory, the number is 2,196,000.

TABLE 405.—*Hogs: Summary of spring and fall pig surveys*

State and division	Sows farrowed						Average number of pigs saved per litter [1]				Intended farrowing [2] (sows bred or to be bred)					
	Spring, 1924, compared with spring, 1923	Fall, 1924, compared with fall, 1923	Spring, 1925, compared with spring, 1924	Fall, 1925, compared with fall, 1924	Spring, 1926, compared with spring, 1925	Fall, 1926, compared with fall, 1925	1925		1926		Fall, 1924, compared with actual 1923	Spring, 1925, compared with actual 1924	Fall, 1925, compared with actual 1924	Spring, 1926, compared with actual 1925	Fall, 1926, compared with actual 1925	Spring, 1927, compared with actual 1926
							Spring	Fall	Spring	Fall						
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Number*	*Number*	*Number*	*Number*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Maine	87.5	101.0	80.4	89.5	99.5	112.0	6.8	6.9	6.2	6.8	119.3	107.2	111.9	130.2	138.4	100.4
New Hampshire	83.7	89.4	91.3	90.1	100.8	103.7	7.5	7.0	6.9	6.7	117.9	113.9	165.3	119.1	190.1	105.4
Vermont	89.1	75.0	75.0	81.3	110.0	113.8	6.9	6.9	6.7	7.6	112.1	104.4	124.4	109.8	131.1	108.0
Massachusetts	107.0	92.9	91.9	102.3	100.0	100.7	6.1	5.9	5.2	5.7	130.5	111.2	124.4	114.6	139.5	102.1
Rhode Island	60.0	41.5	66.7	86.7	90.0	100.0	8.8	7.5	6.4	6.7	137.5	176.5	83.3	106.2	188.9	121.4
Connecticut	75.5	67.0	78.2	98.6	107.5	104.5	6.6	5.3	6.4	6.4	101.6	79.6	108.3	102.5	158.9	119.5
New York	77.6	80.9	84.8	92.5	93.1	114.1	7.3	6.8	6.7	7.0	105.1	107.4	113.3	108.5	127.1	117.2
New Jersey	82.3	87.2	77.7	101.7	109.9	115.8	6.4	6.4	5.6	6.2	113.2	100.4	102.3	109.4	154.6	119.0
Pennsylvania	83.0	88.9	76.7	98.8	88.6	114.6	6.4	6.3	6.1	6.2	108.8	95.2	101.4	106.3	117.7	115.0
Ohio	83.9	74.6	80.7	82.6	102.5	106.2	6.3	6.0	5.8	5.8	91.7	85.8	95.0	103.4	126.7	114.1
Indiana	81.4	68.2	77.9	80.6	106.3	106.0	6.3	5.9	5.9	5.6	89.8	86.4	95.3	108.0	130.5	113.6
Illinois	76.3	65.6	83.0	89.0	106.2	110.5	5.9	5.8	5.6	5.5	81.9	92.3	99.5	112.2	134.3	106.5
Michigan	78.5	72.6	84.2	87.8	100.1	110.9	6.7	6.2	6.1	6.3	88.7	92.8	108.6	108.4	143.6	114.2
Wisconsin	75.8	61.5	84.5	96.8	106.3	107.4	6.4	5.9	5.9	6.1	80.9	92.4	110.9	117.2	144.6	109.7
Minnesota	81.6	69.4	88.0	81.7	106.6	100.5	5.7	5.4	5.6	5.8	92.1	93.7	107.7	110.1	136.9	105.9
Iowa	81.8	66.4	81.5	93.0	101.0	112.2	5.6	5.5	5.4	5.5	82.4	92.4	101.6	113.7	129.6	109.4
Missouri	75.7	64.2	77.9	82.8	104.7	100.4	6.0	5.9	5.8	5.9	88.6	82.7	97.9	110.0	134.4	112.8
North Dakota	92.2	105.0	73.7	77.2	98.5	79.8	5.6	5.4	5.8	5.9	140.2	90.1	120.3	112.7	181.5	106.6
South Dakota	82.9	81.5	77.6	84.3	101.0	80.3	5.2	5.1	5.4	5.2	103.0	93.5	104.2	108.2	161.6	104.1
Nebraska	80.6	75.1	74.8	78.8	102.2	97.3	5.3	5.3	5.2	5.4	88.9	88.5	98.1	111.8	143.8	108.5
Kansas	69.9	64.1	74.3	77.0	102.6	100.1	5.7	5.8	5.6	5.9	91.[illegible]	83.0	97.7	109.8	146.7	111.3
Corn Belt [3]	79.7	69.4	80.1	85.4	103.5	104.8	5.8	5.7	5.5	5.7	88.6	89.6	100.9	111.1	136.4	108.9
Delaware	98.1	76.7	85.5	104.1	123.4	123.7	6.4	6.1	5.6	6.0	113.6	76.2	93.0	121.4	166.3	124.3
Maryland	86.8	79.1	84.7	90.4	97.7	109.3	6.4	6.2	6.3	5.9	90.9	84.1	98.7	110.6	128.5	114.0
Virginia	87.7	84.7	81.1	91.7	91.0	107.0	6.7	6.6	6.2	6.4	106.5	97.3	107.3	105.9	129.2	118.2
West Virginia	78.6	88.0	76.5	94.0	94.3	104.0	6.9	6.6	6.6	6.8	108.7	90.7	85.2	105.3	128.2	112.5
North Carolina	84.5	82.4	80.9	80.8	95.1	90.0	6.0	5.9	5.9	6.1	124.1	102.3	107.7	109.1	121.7	117.9

[1] Total pigs saved divided by sows farrowed as reported by farmers.
[2] Intentions are as of the close of the preceding 6-month period: e. g., those for spring farrowing, 1927 were intentions expressed as of Dec. 1, 1926.
[3] States, Ohio to Kansas, not including North Dakota.

TABLE 405.—*Hogs: Summary of spring and fall pig surveys*—Continued

State and division	Sows farrowed						Average number of pigs saved per litter				Intended farrowing (sows bred or to be bred)					
							1925		1926							
	Spring, 1924, compared with spring, 1923	Fall, 1924, compared with fall, 1923	Spring, 1925, compared with spring, 1924	Fall, 1925, compared with fall, 1924	Spring, 1926, compared with spring, 1925	Fall, 1926, compared with fall, 1925	Spring	Fall	Spring	Fall	Fall, 1924, compared with actual 1923	Spring, 1925, compared with actual 1924	Fall, 1925, compared with actual 1924	Spring, 1926, compared with actual 1925	Fall, 1926, compared with actual 1925	Spring, 1927, compared with actual 1926
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Number*	*Number*	*Number*	*Number*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
South Carolina	82.5	82.9	76.7	71.8	79.5	83.9	5.0	5.3	5.3	5.4	103.5	106.5	110.4	112.8	126.9	132.8
Georgia	77.9	74.4	97.4	89.7	96.4	88.1	5.8	5.4	5.6	5.6	113.7	115.2	113.2	114.1	119.8	120.7
Florida	74.4	79.1	83.8	90.2	102.4	95.3	5.2	4.9	5.4	5.5	112.4	125.7	106.7	110.8	131.2	123.5
Kentucky	64.8	76.2	78.6	91.2	108.4	107.0	6.1	6.0	5.9	6.3	79.4	92.1	114.6	116.5	143.1	122.5
Tennessee	63.8	68.6	70.0	84.6	92.7	102.0	5.9	6.0	6.0	6.1	95.8	95.4	103.8	115.3	134.4	129.3
Alabama	82.9	84.1	83.5	79.2	98.2	87.7	5.5	5.0	5.3	5.2	111.6	119.9	113.2	118.6	148.8	129.0
Mississippi	74.8	75.9	83.5	80.8	110.7	92.2	5.2	5.2	5.1	5.6	111.8	113.7	120.0	124.4	160.4	134.0
Arkansas	71.8	68.3	81.9	82.4	84.1	90.3	5.9	5.8	5.4	5.4	105.7	108.7	125.2	122.2	150.6	139.5
Louisiana	76.8	81.4	82.5	73.2	98.7	79.2	5.1	5.6	5.2	5.5	117.7	121.2	107.4	150.0	133.6	135.4
Oklahoma	49.9	59.1	79.7	69.5	79.9	98.3	5.6	5.8	5.8	5.5	90.5	93.2	120.2	101.6	170.6	136.6
Texas	66.4	74.6	111.6	62.5	95.2	107.1	5.4	5.0	5.7	5.7	107.2	106.2	129.5	107.7	197.5	144.7
Montana	127.0	95.7	82.7	79.4	86.3	91.9	6.3	6.1	6.5	6.1	140.3	96.0	149.6	101.1	156.4	109.4
Idaho	103.3	82.5	78.8	90.5	112.7	97.9	6.0	6.1	6.0	6.0	126.4	92.9	93.1	118.7	143.3	139.2
Wyoming	115.2	95.1	69.6	94.2	89.2	99.1	5.8	6.2	5.7	5.5	127.3	106.7	126.6	117.6	224.4	132.2
Colorado	73.5	69.6	81.3	92.7	89.5	85.8	5.6	5.0	5.8	6.0	110.6	108.4	101.6	113.5	167.4	114.7
New Mexico	81.8	59.0	78.9	83.0	89.7	116.7	6.3	5.5	4.7	5.8	116.4	121.7	158.8	105.3	252.2	148.8
Arizona	96.6	50.0	81.1	77.8	94.7	100.0	5.3	5.0	5.7	5.0	108.0	114.3	71.4	76.9	200.0	125.0
Utah	73.5	65.9	90.1	72.7	82.1	120.0	5.0	6.2	6.3	6.7	102.6	131.5	130.2	125.0	168.1	126.3
Nevada	98.6	64.7	67.5	76.3	103.6	122.2	5.8	6.8	6.3	5.8	134.5	86.1	134.5	119.2	194.7	137.5
Washington	97.4	78.7	78.0	79.0	93.9	115.0	6.3	6.7	6.6	6.6	136.0	99.0	92.1	116.9	156.1	125.8
Oregon	91.9	92.4	72.3	80.7	105.1	107.8	7.1	6.6	6.8	6.6	105.8	93.0	92.3	109.3	137.2	139.4
California	85.9	81.4	68.4	84.2	122.0	117.2	5.4	6.2	6.0	6.1	85.7	116.5	110.8	118.2	171.4	130.4
United States	78.8	71.8	81.2	84.6	101.7	102.4	5.8	5.7	5.6	5.8	94.1	94.3	104.5	111.9	139.0	113.2

Division of Crop and Livestock Estimates. Based on reports of about 140,000 farmers gathered in cooperation with the Post Office Department through the rural mail carriers. Periods covered: Dec. 1 to June 1 (spring), June 1 to Dec. 1 (fall).

TABLE 406.—*Hogs: Receipts at principal markets and all markets, 1909–1926*

[Thousands—i. e., 000 omitted]

Year	Chicago	Denver	East St. Louis	Fort Worth	Kansas City	Omaha	South St. Joseph	South St. Paul	Sioux City	Total nine markets	All other markets reporting	Total all markets reporting
1909	6, 619	242	2, 473	868	3, 693	2, 135	1, 694	725	1, 077	18, 926	(1)	(1)
1910	5, 587	187	2, 054	541	2, 086	1, 894	1, 353	836	1, 044	15, 582	(1)	(1)
1911	7, 103	220	3, 124	556	3, 168	2, 367	1, 922	911	1, 349	20, 720	(1)	(1)
1912	7, 181	222	2, 530	388	2, 523	2, 886	1, 970	984	1, 698	20, 382	(1)	(1)
1913	7, 571	247	2, 584	404	2, 568	2, 543	1, 869	1, 257	1, 533	20, 576	(1)	(1)
1914	6, 618	256	2, 559	515	2, 265	2, 259	1, 725	1, 590	1, 257	19, 044	(1)	(1)
1915	7, 652	344	2, 592	464	2, 531	2, 643	1, 698	2, 155	1, 761	21, 840	14, 373	36, 213
1916	9, 188	467	3, 057	968	2, 979	3, 117	2, 199	2, 675	2, 131	26, 781	16, 484	43, 265
1917	7, 169	352	2, 706	1, 062	2, 277	2, 797	1, 920	1, 928	2, 149	22, 360	15, 682	38, 042
1918	8, 614	384	3, 256	702	3, 328	3, 430	2, 351	2, 061	2, 421	26, 607	18, 256	44, 863
1919	8, 672	368	3, 651	588	3, 141	3, 179	2, 126	2, 190	2, 322	26, 237	18, 232	44, 469
1920	7, 526	341	3, 399	413	2, 466	2, 708	1, 914	2, 247	2, 173	23, 187	18, 934	42, 121
1921	8, 148	334	3, 330	382	2, 205	2, 665	1, 785	2, 210	1, 739	22, 798	18, 303	41, 101
1922	8, 156	395	3, 606	510	2, 655	2, 839	2, 061	2, 523	1, 856	24, 601	19, 466	44, 067
1923	10, 460	495	4, 831	486	3, 615	3, 649	2, 457	3, 338	2, 989	32, 320	23, 010	55, 330
1924	10, 443	569	4, 580	392	2, 933	3, 978	2, 234	3, 751	3, 732	32, 612	22, 802	55, 414
1925	7, 996	467	3, 512	312	2, 067	3, 355	1, 673	3, 637	3, 396	26, 415	17, 514	43, 929
1926	7, 093	497	3, 536	217	2, 036	2, 647	1, 462	3, 451	2, 475	23, 414	16, 358	39, 772

Division of Statistical and Historical Research. Prior to 1915 receipts compiled from yearbooks of stockyard companies; subsequent figures compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Receipts, 1900–1908, are available in 1924 Yearbook, p. 902, Table 500.

[1] Figures not available prior to 1915.

TABLE 407.—*Hogs: Receipts at all public stockyards, 1915–1926*

[Thousands—i. e., 000 omitted]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1915[1]	3, 959	3, 449	3, 199	2, 487	2, 768	2, 874	2, 368	2, 024	1, 966	2, 457	3, 728	4, 934	36, 213
1916[1]	5, 309	4, 233	3, 489	2, 852	3, 332	3, 054	2, 524	2, 634	2, 386	3, 640	4, 873	4, 939	43, 265
1917	5, 084	3, 933	3, 369	2, 961	3, 264	2, 791	2, 563	1, 853	1, 615	2, 676	3, 941	3, 992	38, 042
1918	4, 444	4, 486	4, 424	3, 696	3, 345	2, 979	3, 099	2. 467	2, 376	3, 399	4, 594	5, 554	44, 833
1919	5, 855	4, 412	3, 643	3, 648	3, 831	3, 773	2, 974	2, 095	2, 397	3, 121	3, 740	4, 980	44, 469
1920	5, 262	3, 422	3, 940	3, 024	4, 210	3, 709	2, 811	2, 491	2, 391	2, 789	3, 872	4, 200	42, 121
1921	4, 700	4, 009	3, 386	3, 229	3, 328	3, 579	2, 727	2, 656	2, 655	3, 214	3, 687	3, 931	41, 101
1922	4, 278	3, 613	3, 411	3, 066	3, 737	3, 776	2, 980	3, 037	3, 062	3, 682	4, 421	5, 004	44, 067
1923	5, 306	4, 492	4, 927	4, 318	4, 524	4, 204	4, 181	3, 714	3, 607	4, 816	5, 416	5, 825	55, 330
1924	6, 253	5, 335	4, 833	4, 374	4, 321	4, 296	4, 091	3, 197	3, 216	3, 990	4, 904	6, 604	55, 414
1925	6, 105	4, 558	3, 528	3, 247	3, 283	3, 507	2, 798	2, 549	2, 741	3, 390	3, 843	4, 380	43, 929
1926	4, 304	3, 372	3, 579	3, 135	3, 037	3, 143	2, 854	2, 804	2, 819	3, 261	3, 554	3, 910	39, 772

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

[1] Complete information for 1915 and 1916, particularly on disposition of stock, is not obtainable from many of these markets.

TABLE 408.—*Hogs: Receipts, local slaughter and stocker and feeder shipments at public stockyards, 1923–1926*

[In thousands—i. e., 000 omitted]

Market	Receipts				Local slaughter				Stocker and feeder shipments			
	1923	1924	1925	1926	1923	1924	1925	1926	1923	1924	1925	1926
Albany, N. Y	(1)	(1)	(1)	(1)	0	(1)	0	0	0	0	0	0
Amarillo, Tex	65	21	20	10	0	0	2	1	0	0	0	0
Atlanta, Ga	201	159	124	140	95	78	87	94	0	1	(1)	0
Augusta, Ga	11	7	4	3	7	6	4	3	(1)	(1)	(1)	(1)
Baltimore, Md	1, 547	1, 513	1, 007	948	1, 202	1, 197	835	824	0	0	0	0
Boston, Mass	5	8	11	12	0	0	0	0	0	0	0	0
Buffalo, N. Y	1, 831	1, 656	1, 131	969	834	849	539	401	0	0	(1)	(1)
Chattanooga, Tenn	16	19	20	19	16	19	20	19	0	0	0	0
Cheyenne, Wyo	69	170	196	239	0	0	0	0	0	0	0	0
Chicago, Ill	10, 460	10, 443	7, 996	7, 093	8, 692	7, 451	5, 601	4, 984	2	1	(1)	1
Cincinnati, Ohio	1, 401	1, 365	1, 040	1, 047	784	854	755	729	4	2	2	1
Cleveland, Ohio	1, 185	1, 269	785	701	927	987	547	525	0	0	0	0
Dallas, Tex	111	108	54	44	111	108	54	44	0	0	0	0
Dayton, Ohio	167	161	122	118	101	102	92	86	0	0	0	0
Denver, Colo	495	569	467	497	394	459	344	364	93	54	40	21
Detroit, Mich	538	556	439	427	358	350	311	299	(1)	1	1	1
East St. Louis, Ill	4, 831	4, 580	3, 512	3, 536	1, 842	1, 570	1, 138	1, 063	41	11	14	10
El Paso, Tex	27	28	26	34	22	25	23	25	2	1	2	3
Evansville, Ind	256	191	152	169	78	52	19	17	6	3	5	10
Fort Wayne, Ind	58	91	94	92	18	19	20	14	1	5	7	8
Fort Worth, Tex	486	392	312	217	377	349	295	204	22	6	11	4
Fostoria, Ohio	111	117	106	86	9	11	7	3	4	3	3	2
Indianapolis, Ind	2, 876	2, 865	2, 067	1, 771	1, 792	1, 577	1, 131	1, 064	18	15	13	23
Jacksonville, Fla	107	86	54	46	26	19	21	14	0	1	1	2
Jersey City, N. J	513	535	467	356	513	535	467	356	0	0	0	0
Kansas City, Mo	3, 615	2, 933	2, 067	2, 036	2, 721	1, 872	1, 237	1, 427	283	134	67	110
Knoxville, Tenn	44	52	38	24	22	26	25	24	0	0	0	0
Lafayette, Ind	129	142	122	110	61	68	60	62	3	1	2	4
Lancaster, Pa	155	81	66	80	20	27	29	29	0	0	0	0
Laredo, Tex	2	3	3	3	2	3	3	3	0	(1)	(1)	0
Los Angeles, Calif	227	270	217	199	211	268	211	197	17	2	6	2
Louisville, Ky	626	470	295	282	365	323	234	189	2	2	2	3
Marion, Ohio	103	82	54	57	28	25	16	10	2	2	1	4
Memphis, Tenn	85	80	66	55	65	69	56	42	6	5	7	9
Milwaukee, Wis	555	523	459	613	548	515	453	560	0	0	0	1
Montgomery, Ala	73	62	47	71	5	3	2	2	10	1	4	14
Moultrie, Ga	33	30	38	52	26	19	30	38	1	4	1	5
Muncie, Ind	0	0	74	88	0	0	31	28	0	0	2	6
Nashville, Tenn	492	312	243	219	180	186	154	116	1	1	1	(1)
Newark, N. J	576	605	533	460	576	605	533	460	(1)	(1)	0	(1)
New Orleans, La	46	50	30	33	42	42	25	27	3	2	4	4
New York, N. Y	1, 160	1, 199	928	924	1, 160	1, 199	928	924	0	0	0	0
North Salt Lake, Utah	234	475	380	337	51	69	50	36	1	1	2	(1)
Ogden, Utah	256	280	255	294	66	68	64	55	4	6	3	4
Oklahoma City, Okla	488	325	276	218	419	274	240	184	17	7	1	4
Omaha, Nebr	3, 649	3, 978	3, 355	2, 647	2, 780	3, 109	2, 416	1, 685	14	10	3	11
Pasco, Wash	2	9	9	4	0	0	0	0	0	0	0	0
Peoria, Ill	573	880	706	753	118	136	109	103	7	4	4	12
Philadelphia, Pa	358	375	278	252	331	355	265	237	0	0	0	0
Pittsburgh, Pa	3, 054	3, 038	2, 312	2, 059	597	674	520	432	0	0	0	0
Portland, Oreg	287	357	265	231	187	180	165	132	18	20	19	20
Pueblo, Colo	16	38	29	11	(1)	(1)	(1)	0	0	0	0	0
Richmond, Va	273	329	197	182	260	311	194	177	2	1	1	2
South St. Joseph, Mo	2, 457	2, 234	1, 673	1, 462	2, 001	1, 605	1, 196	1, 151	17	13	30	28
South St. Paul, Minn	3, 338	3, 751	3, 637	3, 451	2, 728	2, 919	2, 824	2, 573	151	127	160	375
San Antonio, Tex	61	64	56	39	45	50	41	33	10	7	9	3
Seattle, Wash	218	275	256	208	214	270	249	199	3	3	7	8
Sioux City, Iowa	2, 989	3, 732	3, 396	2, 475	1, 781	2, 227	2, 076	1, 547	9	(1)	66	163
Sioux Falls, S. Dak	503	122	191	288	69	58	59	87	4	1	1	2
Spokane, Wash	82	133	166	102	58	94	103	44	9	12	10	10
Springfield, Ohio	64	91	109	124	5	8	3	5	0	0	5	11
Toledo, Ohio	158	154	126	112	21	26	14	45	(1)	0	(1)	1
Washington, D. C	166	193	140	119	165	193	140	119	0	0	0	0
Wichita, Kans	706	734	631	524	623	689	597	485	32	26	15	6
Discontinued [2]	110	44	(1)	0	23	6	(1)	0	(1)	0	0	0
Total	55, 330	55, 414	43, 929	39, 772	36, 172	35, 188	27, 665	24, 580	820	496	532	917

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Earlier data in 1925 Yearbook, pp. 1120–1122.

Local slaughter represents number driven out from public stockyards for local slaughter.

[1] Not over 500.

[2] Includes only those markets which have been totally discontinued.

TABLE 409.—*Hogs: Receipts, local slaughter, and stocker and feeder shipments at certain public stockyards, 1926*

[In thousands—i. e., 000 omitted]

Stockyard	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Chicago, Ill.:													
Receipts					509					501			7,093
Local slaughter										351			4,984
Stocker and feeder shipments										(1)			
Denver, Colo.:													
Receipts										29			497
Local slaughter										17			364
Stocker and feeder shipments										8			21
East St. Louis, Ill.:													
Receipts	311									286			3,536
Local slaughter	121									73			1,053
Stocker and feeder shipments										1			19
Fort Worth, Tex.:													
Receipts										20			217
Local slaughter										18			204
Stocker and feeder shipments										1			4
Kansas City, Mo.:													
Receipts										167			2,636
Local slaughter										118			1,427
Stocker and feeder shipments													110
Omaha, Nebr.:													
Receipts										122			2,647
Local slaughter													1,685
Stocker and feeder shipments													11
Sioux City, Iowa:													
Receipts													2,475
Local slaughter													1,547
Stocker and feeder shipments													163
South St. Joseph, Mo.:													
Receipts													1,462
Local slaughter													1,151
Stocker and feeder shipments													28
South St. Paul, Minn.:													
Receipts													3,451
Local slaughter													2,573
Stocker and feeder shipments													375

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Local slaughter data from stockyards.
Local slaughter represents number driven out from public stockyards for local slaughter.

[1] Not over 500.

TABLE 410.—*Hogs: Monthly average live weight, Chicago, 1909–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Average:	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
1909–1913	215	219	224	230	234	235	237	240	234	225	219	217
1914–1920	217	223	228	231	232	233	240	244	241	225	214	214
1921–1925	230	232	240	242	240	242	252	258	258	242	228	226
1909	203	204	206	212	216	219	225	232	232	227	225	214
1910	210	213	218	227	239	242	246	255	259	253	232	224
1911	226	230	239	241	242	236	233	230	224	212	208	213
1912	212	217	218	227	232	235	239	240	235	226	222	223
1913	226	230	240	242	242	244	243	233	222	209	207	213
1914	216	224	233	233	236	237	244	248	242	229	218	226
1915	223	224	231	233	233	231	238	246	235	204	187	190
1916	195	204	214	219	220	226	231	232	223	210	195	193
1917	199	204	209	213	217	225	232	233	231	212	209	211
1918	216	231	238	242	238	235	243	243	247	233	226	223
1919	228	232	230	230	232	233	242	251	254	237	226	224
1920	239	239	244	248	245	243	252	258	258	247	234	230
1921	234	234	241	242	239	241	250	259	262	243	225	226
1922	231	236	244	246	244	247	259	268	265	243	231	234
1923	239	241	247	249	242	242	250	253	254	247	234	231
1924	227	229	237	239	239	241	251	255	254	235	220	214
1925	220	222	229	235	236	238	249	256	253	242	228	225
1926	231	235	245	244	247	255	271	281	267	232	217	220

Division of Statistical and Historical Research. Figures for 1909–1919 compiled from Chicago Drovers Journal Yearbook; subsequent figures from data of the reporting service of the Division of Livestock, Meats, and Wool. Data for 1900–1908 are available in 1924 Yearbook, p. 909, Table 506.

TABLE 411.—*Feeding swine: Inspected shipments from public stockyards, 1926*

Origin and destination	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Market origin:	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*
Denver, Colo.	79	245	694	1,177	1,043	860	260	416	685	509	798	651	7,417
East St. Louis, Ill.	3,562	3,824	2,779	2,797	1,271	2,541	2,152	2,401	1,570	1,289	1,058	1,620	26,864
Fort Worth, Tex.	1,264	1,218	930	532	674	921	790	1,026	714	2,283	1,909	1,480	13,741
Indianapolis, Ind.	2,254	914	160	1,176	3,135	3,600	2,420	1,396	1,700	1,785	1,587	2,000	22,127
Kansas City, Kans.	5,531	6,289	6,521	7,227	12,660	13,382	2,881	4,994	9,475	9,695	10,005	8,259	96,919
Los Angeles, Calif.	90	60	108	132	118	9	100	144	202	181	93	134	1,371
Oklahoma City, Okla.	707	1,108	1,315	811	1,146	1,020	427	594	1,081	445	1,132	429	10,215
Omaha, Nebr.	488	1,267	1,383	1,004	647	982	987	974	1,498	2,488	1,351	2,148	15,217
Portland, Oreg.	696	1,445	1,519	1,862	912	1,769	1,420	2,262	3,025	2,732	1,017	1,468	20,127
Sioux City, Iowa.	231	294	636	507	519	2,204	1,934	1,180	1,416	1,744	1,378	388	12,431
South St. Joseph, Mo.	1,623	1,026	1,638	1,176	1,915	3,613	2,592	1,442	1,464	1,927	1,730	2,325	22,471
South St. Paul, Minn.	21,709	18,852	13,899	13,462	19,838	17,114	11,289	11,680	32,522	62,516	73,650	60,037	356,568
Wichita, Kans.	168	274	1,167	309	377	135	649	------	625	548	469	308	5,029
All other inspected	5,373	6,340	8,708	5,180	3,646	4,424	3,320	4,800	3,525	3,548	3,547	3,418	55,829
Total	43,775	43,156	41,457	37,352	47,901	52,574	31,221	33,309	59,502	91,690	99,724	84,665	666,326
State destination:													
California	335	197	108	156	118	298	222	144	202	181	438	134	2,533
Colorado	232	245	279	610	792	730	260	287	365	649	798	651	5,898
Illinois	7,249	8,405	5,698	4,004	6,038	11,953	5,063	3,277	8,511	20,077	13,291	12,628	106,194
Indiana	8,618	5,244	1,945	6,002	12,973	9,429	4,133	3,078	5,557	11,276	15,103	17,797	101,155
Iowa	3,547	3,822	5,666	3,024	3,544	3,297	2,732	2,772	9,002	16,367	14,522	6,583	74,878
Kansas	1,212	1,240	2,229	923	1,208	1,149	1,478	379	606	1,192	1,858	2,568	18,042
Michigan	1,436	1,203	2,162	2,130	2,689	3,936	1,674	1,193	1,782	4,744	4,788	3,728	31,465
Minnesota	2,256	2,846	3,179	3,389	3,807	2,117	2,763	1,782	8,128	6,530	8,735	5,372	50,904
Missouri	5,261	4,289	4,419	2,576	2,585	3,767	2,679	2,206	2,636	4,330	6,047	5,001	45,796
Nebraska	999	673	1,539	1,872	1,529	2,039	1,454	1,067	1,869	2,934	1,383	2,682	20,060
Ohio	3,745	3,408	796	1,441	4,063	3,820	448	5,516	7,199	7,817	20,243	18,790	77,286
Oklahoma	424	723	883	470	890	447	405	590	1,935	725	1,473	602	9,567
Oregon	682	1,360	1,306	1,826	797	1,618	1,313	1,870	2,659	2,851	976	1,349	18,607
Tennessee	997	1,542	2,217	653	704	447	660	967	886	656	421	423	10,573
Texas	1,459	1,677	1,702	1,513	923	1,994	1,048	2,881	3,662	5,189	3,065	2,344	27,457
All other inspected	5,323	6,282	7,329	6,763	5,241	5,533	4,889	5,280	4,503	6,172	6,583	4,013	67,911
Total	43,775	43,156	41,457	37,352	47,901	52,574	31,221	33,309	59,502	91,690	99,724	84,665	666,326

Division of Statistical and Historical Research. Compiled from Bureau of Animal Industry inspection records.

TABLE 412.—*Hogs: Corn and hog ratios,*[1] *United States, averages 1910–1914, 1915–1919, and monthly 1920–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Average	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*
1910–1914	12.2	12.1	12.3	12.2	11.1	10.6	10.4	10.4	10.7	11.2	11.7	11.7	11.4
1915–1919	10.3	10.2	10.5	10.3	10.0	9.6	9.5	9.4	9.9	10.4	10.5	10.5	10.1
1920	9.3	9.2	8.9	8.4	7.6	7.1	7.8	8.5	10.1	13.0	15.0	13.2	9.8
1921	13.5	13.5	14.3	13.0	12.5	11.0	13.1	14.8	14.0	15.9	16.0	15.2	14.0
1922	15.4	16.5	15.8	15.7	15.0	14.7	14.7	13.7	13.4	13.4	12.8	11.7	14.4
1923	11.1	10.9	10.2	9.8	8.8	7.9	7.5	7.7	8.5	8.8	8.2	9.0	9.0
1924	9.0	8.5	8.6	8.6	8.5	8.1	6.7	8.0	7.7	8.7	8.7	7.9	8.2
1925	8.3	8.4	10.6	11.2	10.0	9.7	11.5	11.4	11.6	13.4	14.3	14.9	11.3
1926	15.8	17.2	17.5	17.5	17.8	18.7	17.7	14.7	15.8	16.2	17.3	17.0	16.9

Division of Crop and Livestock Estimates.

[1] Number of bushels of corn required to buy 100 pounds of live hogs, based on averages of farm prices of corn and of hogs for the month.

TABLE 413.—*Hogs: Estimated price per 100 pounds, received by producers in the United States, 1910–1926*

Year beginning November	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Weighted average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1910–1913	6.96	6.73	6.85	6.94	7.02	7.17	6.89	6.84	7.02	7.39	7.45	7.20	7.01
1914–1920	11.19	10.65	10.73	10.93	11.56	11.88	11.97	11.73	12.16	12.57	12.36	11.89	11.53
1921–1925	8.08	7.89	8.31	8.76	9.34	9.22	9.12	9.13	9.22	9.56	9.62	9.65	8.92
1910	7.61	7.16	7.44	7.04	6.74	6.17	5.72	5.66	5.92	6.54	6.53	6.09	6.61
1911	5.86	5.72	5.74	5.79	5.94	6.78	6.79	6.65	6.64	7.11	7.47	7.70	6.43
1912	7.05	6.89	6.77	7.17	7.62	7.94	7.45	7.61	7.81	7.79	7.68	7.60	7.39
1913	7.33	7.16	7.45	7.75	7.80	7.80	7.60	7.43	7.72	8.11	8.11	7.43	7.60
1914	7.00	6.67	6.57	6.34	6.33	6.48	6.77	6.80	6.84	6.61	6.79	7.18	6.69
1915	6.35	6.02	6.32	7.07	7.86	8.21	8.37	8.21	8.40	8.61	9.22	8.67	7.61
1916	8.74	8.76	9.16	10.33	12.32	13.61	13.72	13.50	13.35	14.24	15.69	16.15	12.10
1917	15.31	15.73	15.26	15.03	15.58	15.76	15.84	15.37	15.58	16.89	17.50	16.50	15.78
1918	15.92	15.82	15.69	15.53	16.13	17.39	18.00	17.80	19.22	19.30	15.81	13.88	16.60
1919	13.36	12.66	13.36	13.62	13.59	13.73	13.44	13.18	13.65	13.59	13.98	13.57	13.43
1920	11.64	8.90	8.72	8.58	9.13	7.96	7.62	7.22	8.09	8.73	7.51	7.31	8.52
1921	6.66	6.52	6.89	8.24	9.08	8.83	9.05	9.11	9.12	8.54	8.23	8.33	8.10
1922	7.78	7.63	7.77	7.65	7.52	7.45	7.13	6.37	6.68	6.85	7.81	7.23	7.34
1923	6.66	6.39	6.59	6.54	6.63	6.70	6.68	6.55	6.60	8.54	8.50	9.45	7.06
1924	8.62	8.39	9.31	9.62	11.83	11.64	10.78	10.82	12.02	12.19	11.50	11.16	10.46
1925	10.66	10.51	10.99	11.76	11.65	11.49	11.97	12.80	12.69	11.66	12.07	12.06	11.63
1926	11.45	10.97	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Division of Crop and Livestock Estimates.

TABLE 414.—*Hogs: Estimated price per 100 pounds, received by producers, by States, 1926*

State	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Maine	11.90	12.00	12.00	12.20	12.00	12.20	12.30	12.00	12.30	12.40	12.10	12.20	12.18
New Hampshire	11.40	11.80	12.20	12.20	12.30	12.30	12.70	12.20	12.70	13.10	12.30	12.20	12.28
Vermont	12.20	11.50	11.70	12.30	12.20	12.20	12.90	12.00	12.40	12.10	12.00	11.30	12.07
Massachusetts	12.50	12.30	12.20	12.40	13.00	13.30	13.70	12.50	13.20	13.00	13.60	12.50	12.85
Rhode Island	11.40	11.00	12.30	13.00	13.00	14.00	14.00	14.00	13.00	14.00	13.50	12.70	12.99
Connecticut	13.00	13.30	12.00	12.10	12.90	13.90	13.50	12.40	12.10	14.00	13.60	12.80	12.97
New York	11.70	12.00	12.20	12.40	12.00	12.60	12.60	12.20	12.50	12.20	12.10	12.10	12.22
New Jersey	12.30	12.50	12.90	12.80	13.00	13.00	13.60	13.50	13.20	13.80	13.30	13.00	13.08
Pennsylvania	13.00	12.80	12.50	12.80	12.70	13.80	13.70	13.20	13.30	13.30	13.20	12.50	13.07
Ohio	11.60	12.50	12.40	12.20	12.70	13.60	13.60	12.50	12.80	12.70	12.10	11.50	12.52
Indiana	11.50	12.60	12.40	12.20	12.80	13.80	13.70	12.30	13.00	12.70	12.00	11.30	12.52
Illinois	11.20	12.10	12.20	11.80	12.40	13.20	13.30	12.10	12.60	12.30	11.50	11.10	12.15
Michigan	11.10	11.90	11.70	11.80	11.90	12.70	12.70	12.30	12.50	12.40	11.80	11.40	12.02
Wisconsin	10.60	11.70	11.70	11.50	11.90	12.70	12.50	11.40	12.00	12.10	11.40	10.90	11.70
Minnesota	11.00	11.70	11.70	11.30	11.80	12.80	12.30	11.10	11.60	11.70	11.20	10.80	11.58

TABLE 414.—*Hogs: Estimated price per 100 pounds, received by producers, by States, 1926*—Continued

State	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Iowa	10.80	11.80	11.70	11.40	12.00	13.00	12.70	11.20	11.70	11.90	11.10	10.80	11.68
Missouri	11.10	12.00	11.80	11.70	12.40	13.30	13.30	12.00	12.70	12.60	11.60	10.80	12.11
North Dakota	10.10	11.10	11.10	10.90	11.20	11.70	11.70	10.50	10.80	11.00	10.60	10.20	10.91
South Dakota	10.60	11.60	11.60	11.30	12.70	12.80	12.00	10.80	11.50	11.40	10.90	10.60	11.48
Nebraska	10.70	11.80	11.50	11.00	11.70	12.90	12.40	11.20	11.80	11.80	11.00	10.70	11.54
Kansas	11.40	11.90	11.80	11.40	12.00	13.20	13.00	11.80	12.40	12.40	11.30	10.70	11.94
Delaware	13.10	12.00	13.00	13.00	13.30	13.30	13.00	13.00	13.10	14.10	13.00	13.00	13.08
Maryland	12.20	12.80	13.00	13.10	12.85	13.20	12.70	13.00	13.40	13.20	12.90	12.90	12.94
Virginia	11.50	12.00	11.90	12.10	11.90	12.30	12.60	12.20	12.19	12.10	12.10	11.90	12.06
West Virginia	12.40	11.70	11.80	11.60	12.00	13.00	11.90	12.00	12.10	12.40	11.50	11.40	11.98
North Carolina	12.00	11.70	11.50	12.00	12.00	12.80	13.00	13.00	13.00	12.70	12.60	12.20	12.38
South Carolina	10.40	11.30	10.90	10.30	10.80	11.00	11.30	11.50	11.40	12.00	11.70	12.00	11.22
Georgia	10.40	10.40	10.30	10.80	10.80	11.70	11.30	11.30	11.40	11.20	11.40	10.50	10.96
Florida	9.50	10.00	9.50	9.70	10.50	10.00	11.00	10.70	10.00	10.40	10.20	9.80	10.11
Kentucky	11.40	12.70	11.20	12.00	12.60	12.90	13.40	12.70	13.00	12.70	12.10	11.80	12.38
Tennessee	11.10	11.90	12.00	11.70	11.90	12.70	12.80	12.00	12.70	12.20	11.90	11.30	12.02
Alabama	10.50	10.60	10.70	11.00	10.70	11.10	10.90	11.30	11.20	10.50	10.80	10.60	10.82
Mississippi	10.20	9.90	10.20	10.30	10.20	10.60	11.10	10.90	10.70	10.70	10.90	10.60	10.52
Arkansas	9.60	9.80	10.10	10.10	9.20	10.50	10.70	10.70	10.20	10.70	10.40	10.00	10.17
Louisiana	9.00	9.10	9.20	9.00	8.40	8.70	10.00	9.40	8.80	10.00	10.20	9.80	9.30
Oklahoma	10.50	11.40	11.20	10.90	11.30	12.40	12.80	11.70	12.40	12.20	11.60	10.70	11.59
Texas	10.80	11.00	11.10	11.00	11.90	12.10	12.30	12.20	12.20	12.00	12.10	11.30	11.72
Montana	10.50	11.10	11.50	11.40	11.80	12.30	12.20	12.00	12.30	12.10	11.60	10.50	11.61
Idaho	11.20	12.00	12.00	12.10	12.00	12.70	13.20	12.60	12.60	12.50	11.70	11.00	12.13
Wyoming	10.50	11.80	11.10	11.00	11.00	11.30	11.80	11.60	11.80	11.40	11.60	10.40	11.28
Colorado	10.60	11.60	11.60	11.30	11.70	12.60	13.10	11.90	12.00	12.30	11.70	10.70	11.76
New Mexico	10.70	10.50	11.30	10.10	11.60	12.50	13.10	12.60	12.50	11.80	11.40	10.40	11.54
Arizona	10.90	12.00	13.00	12.50	11.90	12.80	14.00	14.00	13.80	14.20	13.50	10.00	12.72
Utah	11.70	11.00	11.20	11.40	11.70	11.50	13.00	11.30	12.60	12.40	11.90	11.30	11.75
Nevada	......	12.80	12.60	13.50	......	13.00	14.00	13.00	13.80	13.50	14.00	11.50	13.17
Washington	11.60	12.70	12.40	13.00	12.40	13.80	14.40	13.20	13.30	13.40	12.40	11.80	12.87
Oregon	11.40	12.60	13.10	13.60	12.80	12.80	14.00	13.70	13.40	13.40	12.50	11.30	12.88
California	12.20	12.70	13.20	13.60	13.00	13.80	14.50	14.40	13.80	13.90	13.50	12.00	13.38
United States	10.99	11.76	11.65	11.49	11.97	12.80	12.69	11.66	12.07	12.06	11.45	10.97	11.80

Division of Crop and Livestock Estimates.

TABLE 415.—*Hogs: Average price per 100 pounds at Chicago, by months, 1909–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Weighted average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909–1913	7.26	7.43	8.02	8.04	7.81	7.90	8.00	8.00	8.15	7.93	7.48	7.50	7.77
1914–1920	11.74	12.13	13.01	13.14	13.45	13.24	13.70	13.83	14.00	12.67	12.13	11.57	12.76
1921–1925	8.64	9.09	9.90	9.36	9.15	9.01	9.51	9.39	9.36	9.03	8.44	8.46	9.04
1909	6.10	6.35	6.70	7.20	7.30	7.65	7.85	7.75	8.20	7.75	8.00	8.35	7.35
1910	8.55	9.05	10.55	9.90	9.55	9.45	8.75	8.35	8.90	8.50	7.60	7.65	8.90
1911	7.95	7.40	6.85	6.25	6.00	6.25	6.70	7.30	6.90	6.45	6.30	6.40	6.70
1912	6.25	6.20	7.10	7.80	7.65	7.50	7.65	8.25	8.45	8.75	7.75	7.40	7.55
1913	7.45	8.15	8.90	9.05	8.55	8.65	9.05	8.35	8.30	8.20	7.75	7.70	8.35
1914	8.30	8.60	8.70	8.65	8.45	8.20	8.70	9.00	8.85	7.65	7.50	7.10	8.30
1915	6.90	6.80	6.75	7.30	7.60	7.60	7.75	6.90	7.25	7.90	6.65	6.40	7.10
1916	7.20	8.20	9.65	9.75	9.85	9.70	9.80	10.30	10.70	9.80	9.60	9.95	9.60
1917	10.90	12.45	14.80	15.75	15.90	15.50	15.20	16.90	18.20	17.15	17.40	16.85	15.10
1918	16.30	16.65	17.10	17.45	17.45	16.60	17.75	19.00	19.65	17.70	17.70	17.55	17.45
1919	17.60	17.65	19.10	20.40	20.60	20.40	21.85	20.00	17.45	14.35	14.20	13.60	17.85
1920	14.97	14.55	14.94	14.79	14.28	14.68	14.84	14.74	15.88	14.17	11.83	9.55	13.91
1921	9.41	9.42	10.00	8.50	8.35	8.19	9.69	9.26	7.61	7.72	7.01	6.92	8.51
1922	8.02	9.90	10.43	10.81	10.48	10.33	9.70	8.01	8.75	8.80	8.07	8.18	9.22
1923	8.29	8.02	8.18	8.08	7.53	6.92	7.04	7.65	8.35	7.42	6.85	6.87	7.55
1924	7.10	7.06	7.35	7.36	7.34	7.04	7.68	9.38	9.57	6.91	8.97	9.88	8.11
1925	10.38	11.06	13.55	12.55	12.06	12.57	13.46	12.66	12.52	11.31	11.28	10.97	11.81
1926	12.02	12.45	12.20	12.33	13.55	14.01	12.51	11.48	12.03	12.72	11.80	11.57	12.34

Division of Statistical and Historical Research. Figures prior to 1920 from Chicago Drovers Journal Yearbook; subsequent figures compiled from reports of packer and shipper purchases of the reporting service of the Division of Livestock, Meats, and Wool. Prices, 1901–1908, are available in 1924 Yearbook p. 913, Table 512.

TABLE 416.—*Hogs: Average and top price per 100 pounds at six markets, by months, 1926*

CHICAGO

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Butcher, bacon, and shipper hogs:													
Medium to choice—													
Heavyweight (250 to 350 pounds)	*Dols.* 11.83	*Dols.* 12.03	*Dols.* 11.77	*Dols.* 11.95	*Dols.* 13.34	*Dols.* 14.00	*Dols.* 13.02	*Dols.* 12.12	*Dols.* 12.66	*Dols.* 13.18	*Dols.* 12.00	*Dols.* 11.65	*Dols.* 12.46
Medium weight (200 to 250 pounds)	12.12	12.56	12.46	12.62	13.74	14.41	13.63	12.99	13.51	13.54	12.05	11.63	12.94
Common to choice—													
Lightweight (160 to 200 pounds)	12.20	12.86	12.96	13.14	13.71	14.33	13.87	13.20	13.41	13.26	12.62	11.56	13.09
Light lights (130 to 160 pounds)	12.27	12.94	13.01	13.28	13.80	14.39	13.90	13.19	13.09	12.48	11.74	11.50	12.97
Packing hogs, smooth and rough	10.36	10.64	10.58	10.73	12.27	12.58	11.00	10.20	10.76	11.12	10.68	10.68	10.97
Slaughter pigs (90 to 130 pounds), medium to choice	12.89	13.49	13.63	13.64	14.07	14.53	13.83	12.88	12.63	11.96	11.74	11.41	13.06
Bulk of sales	12.05	12.49	12.28	12.40	13.52	14.05	12.59	11.65	12.21	12.66	11.79	11.59	12.44
Top [1]	13.75	14.00	14.25	14.25	14.80	15.00	15.00	14.60	14.65	14.15	13.35	12.15	15.00

EAST ST. LOUIS

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Butcher, bacon, and shipper hogs:													
Medium to choice—													
Heavyweight (250 to 350 pounds)	12.06	12.25	12.06	12.30	13.50	14.24	13.17	12.28	13.07	13.40	11.98	11.67	12.66
Medium weight (200 to 250 pounds)	12.36	12.78	12.74	12.86	13.79	14.48	13.74	13.08	13.70	13.60	12.11	11.82	13.09
Common to choice—													
Lightweight (160 to 200 pounds)	12.61	13.21	13.25	13.28	14.00	14.57	13.99	13.50	13.69	13.40	12.09	11.86	13.29
Light lights (130 to 160 pounds)	12.69	13.38	13.41	13.44	14.09	14.68	14.12	13.41	13.41	12.94	11.98	11.72	13.27
Packing hogs, smooth and rough	10.42	10.78	10.59	10.84	12.20	12.52	10.94	10.02	10.83	11.10	10.66	10.65	10.96
Slaughter pigs (90 to 130 pounds), medium to choice	12.63	13.15	13.36	13.47	14.18	14.73	14.08	13.01	12.91	12.36	11.83	11.54	13.10
Feeder and stocker pigs (70 to 130 pounds), medium to choice	12.09	12.53	12.85	13.19	14.06	14.51	13.70	12.42	12.46	11.80	11.30	11.19	12.68
Bulk of sales	12.48	12.87	12.80	12.98	13.90	14.62	13.90	13.06	13.56	13.46	12.12	11.88	13.14
Top [1]	13.65	14.00	14.15	14.00	14.75	15.25	15.00	14.85	14.75	14.15	13.25	12.55	15.25

FORT WORTH

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Butcher, bacon, and shipper hogs:													
Medium to choice—													
Heavyweight (250 to 350 pounds)	12.00	12.34	11.90	11.86	12.99	14.25	13.49	13.05	13.37	13.18	12.14	11.58	12.68
Medium weight (200 to 250 pounds)	12.38	12.82	12.60	12.67	13.74	14.71	14.15	13.75	14.13	13.62	12.32	11.64	13.21
Common to choice—													
Lightweight (160 to 200 pounds)	12.37	12.80	12.76	12.72	13.75	14.71	14.22	13.70	14.04	13.39	12.20	11.57	13.19
Light lights (130 to 160 pounds)	11.49	12.08	12.11	12.34	13.46	14.34	14.06	13.65	13.94	13.23	12.01	11.41	12.84
Packing hogs, smooth and rough	10.69	11.04	10.57	10.42	11.74	12.86	11.43	10.28	10.98	11.64	10.77	10.37	11.07
Slaughter pigs (90 to 130 pounds), medium to choice	10.44	11.06	11.14	11.54	12.56	13.83	----	----	----	----	----	----	----
Feeder and stocker pigs (70 to 130 pounds), medium to choice	----	----	----	----	----	13.84	14.16	12.50	13.28	13.27	11.69	10.89	----
Bulk of sales	12.51	12.86	12.55	12.62	13.74	14.73	13.88	13.54	13.91	13.57	12.11	11.55	13.13
Top [1]	13.50	13.60	13.25	13.50	14.50	15.30	15.25	15.00	15.00	14.70	13.50	12.25	15.30

KANSAS CITY

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Butcher, bacon, and shipper hogs:													
Medium to choice—													
Heavyweight (250 to 350 pounds)	11.96	12.06	11.62	11.78	13.05	13.90	12.70	11.91	12.47	12.74	11.64	11.39	12.27
Medium weight (200 to 250 pounds)	12.11	12.44	12.29	12.34	13.38	14.23	13.33	12.58	13.17	13.13	11.77	11.43	12.68
Common to choice—													
Lightweight (160 to 200 pounds)	12.20	12.67	12.80	12.85	13.61	14.38	13.65	12.88	13.25	13.05	11.74	11.37	12.87
Light lights (130 to 160 pounds)	12.31	12.84	12.95	13.10	13.74	14.49	13.77	12.98	13.10	12.69	11.64	11.33	12.91
Packing hogs, smooth and rough	10.66	10.78	10.23	10.26	11.68	12.46	10.88	9.74	10.40	10.68	10.29	10.33	10.70
Slaughter pigs (90 to 130 pounds), medium to choice	12.31	13.04	13.40	13.45	14.30	14.97	14.39	12.70	13.06	12.82	11.86	11.52	13.15
Feeder and stocker pigs (70 to 130 pounds), medium to choice	12.25	13.13	13.53	13.66	14.53	15.27	14.75	12.68	13.46	12.98	11.89	11.49	13.30
Bulk of sales	12.06	12.30	12.05	12.15	13.34	14.17	13.00	12.26	12.85	12.88	11.69	11.44	12.52
Top [1]	13.25	13.60	13.85	13.65	14.50	15.00	14.80	14.10	14.10	14.00	12.90	11.90	15.00

[1] High est price, not average.

TABLE 416.—*Hogs: Average and top price per 100 pounds at six markets, by months, 1926*—Continued

OMAHA

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Butcher, bacon, and shipper hogs:													
Medium to choice—													
Heavyweight (250 to 350 pounds)	*Dols.* 11.70	*Dols.* 11.69	*Dols.* 11.36	*Dols.* 11.72	*Dols.* 13.01	*Dols.* 13.71	*Dols.* 12.23	*Dols.* 11.49	*Dols.* 12.22	*Dols.* 12.19	*Dols.* 11.44	*Dols.* 11.34	*Dols.* 12.01
Medium weight (200 to 250 pounds)	11.86	12.20	12.04	12.22	13.27	13.96	12.88	12.38	12.98	12.74	11.59	11.36	12.46
Common to choice—													
Lightweight (160 to 200 pounds)	12.03	12.61	12.58	12.56	13.40	14.16	13.45	12.82	13.19	12.28	11.87	11.16	12.68
Light lights (130 to 160 pounds)	12.08	12.74	12.72	12.62	13.42	14.14	----	----	12.54	11.40	11.10	10.98	----
Packing hogs, smooth and rough	10.49	10.48	10.00	10.28	11.88	12.20	10.72	10.02	10.53	10.36	10.44	10.70	10.68
Feeder and stocker pigs (70 to 130 pounds), medium to choice	11.82	12.77	13.02	13.11	13.70	14.24	13.23	11.43	11.39	10.94	10.79	10.60	12.25
Bulk of sales	11.84	12.19	11.93	12.04	13.15	13.53	12.05	11.33	11.74	11.57	11.19	11.25	11.98
Top [1]	13.10	13.25	13.25	13.15	14.10	14.65	14.45	14.25	13.95	13.50	12.75	11.90	14.65

SOUTH ST. PAUL

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Butcher, bacon, and shipper hogs:													
Medium to choice—													
Heavyweight (250 to 350 pounds)	11.88	11.99	11.61	11.86	13.16	13.78	12.84	12.00	12.45	12.66	11.46	11.27	12.25
Medium weight (200 to 250 pounds)	12.02	12.36	12.18	12.36	13.39	14.04	13.18	12.54	12.95	12.79	11.48	11.30	12.55
Common to choice—													
Lightweight (160 to 200 pounds)	12.16	12.77	12.73	12.88	13.62	14.31	13.34	12.87	13.16	12.78	11.44	11.30	12.78
Light lights (130 to 160 pounds)	12.34	13.02	13.07	13.16	13.81	14.49	13.39	12.82	13.06	12.45	11.41	11.32	12.86
Packing hogs, smooth and rough	9.88	10.35	9.96	10.03	11.66	12.48	10.77	9.81	10.74	10.78	10.05	10.31	10.57
Slaughter pigs (90 to 130 pounds), medium to choice	12.78	13.60	13.74	13.96	14.49	14.88	13.77			12.39	11.77	11.56	
Feeder and stocker pigs (70 to 130 pounds), medium to choice	12.78	13.60	13.77	13.95	14.49	14.88	13.43	12.44	12.99	12.39	11.77	11.56	13.17
Bulk of sales	12.06	12.37	12.17	12.31	13.34	13.64	11.99	11.21	11.91	11.79	10.82	11.30	12.08
Top [1]	13.25	13.50	13.50	13.50	14.50	15.00	14.35	14.00	13.75	13.25	12.50	11.75	15.00

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

[1] Highest price, not average.

TABLE 417.—*Hogs: Prices of live hogs in Chicago, and wholesale and retail prices of certain pork products, 1913–1926*

Year	Price of live hogs, Chicago (per 100 lbs.)	Hams: Smoked, wholesale: Chicago (price per pound)	Hams: Smoked, wholesale: Percentage of live hog price	Hams: Retail [1]: In leading cities (price per pound)	Hams: Retail [1]: Percentage of live hog price	Bacon: Short clear sides, wholesale: Chicago, (price per pound)	Bacon: Short clear sides, wholesale: Percentage of live hog price	Bacon: Retail: In leading cities (price per pound)	Bacon: Retail: Percentage of live hog price	Fresh pork: Pork loins, wholesale: Chicago, (price per pound)	Fresh pork: Pork loins, wholesale: Percentage of live hog price	Fresh pork: Pork chops, retail: In leading cities (price per pound)	Fresh pork: Pork chops, retail: Percentage of live hog price	Lard: Prime contract, wholesale: New York (price per pound)	Lard: Prime contract, wholesale: Percentage of live hog price	Lard: Retail: In leading cities (price per pound)	Lard: Retail: Percentage of live hog price
	Dollars	Cents	Per cent	Cents	Per cent	Cents	Per cent	Cents	Per cent	Cents	Per cent	Cents	Per cent	Cents	Per cent	Cents	Per cent
1913	8.35	16.6	199	26.9	322	12.7	152	27.0	323	14.9	178	21.0	251	11.0	132	15.8	189
1914	8.30	16.7	201	27.3	329	13.2	159	27.5	331	15.4	186	22.0	265	10.4	125	15.6	188
1915	7.10	15.3	215	26.1	368	11.6	163	26.9	379	14.3	201	20.3	286	9.4	132	14.8	208
1916	9.60	18.5	193	29.4	306	14.9	155	28.7	299	16.2	169	22.7	236	13.5	141	17.5	182
1917	15.10	25.2	167	38.2	253	24.8	164	41.0	272	24.4	162	31.9	211	21.7	144	27.6	183
1918	17.45	31.8	182	47.9	274	27.9	160	52.9	303	29.5	169	39.0	223	25.5	146	33.3	191
1919	17.85	34.3	192	53.4	299	29.1	163	55.4	310	31.5	176	42.3	237	29.0	162	36.9	207
1920	13.91	33.4	240	55.5	399	20.7	149	52.3	376	30.7	221	42.3	304	20.0	144	29.5	212
1921	8.51	26.8	315	48.8	573	13.5	159	42.7	502	22.5	264	34.9	410	11.1	130	18.0	212
1922	9.22	26.5	287	48.8	529	14.1	153	39.8	432	21.7	235	33.0	358	11.5	125	17.0	184
1923	7.55	21.2	281	45.5	603	12.0	159	39.1	518	18.0	238	30.4	403	12.3	163	17.7	234
1924	8.11	20.2	249	45.3	559	14.4	178	37.7	465	19.1	236	30.8	380	13.3	164	19.0	234
1925	11.81	27.1	229	52.6	445	22.3	189	46.7	395	25.0	212	36.6	310	16.8	142	23.3	197
1926	12.34	30.8	250	57.4	465	20.1	163	50.3	408	27.8	225	39.5	320	15.0	122	21.9	177

Division of Statistical and Historical Research. Wholesale prices of ham, bacon, and pork loins in Chicago and of lard in New York. Retail prices in leading cities throughout the United States. Price of live hogs, Bureau of Agricultural Economics; other prices from Bureau of Labor Statistics.

[1] Mostly on sliced ham.

TABLE 418.—*Hogs: Trend of average farm prices and average market prices per 100 pounds at Chicago, 1910–1926*

Year	Weighted average farm price	Weighted average market price at Chicago	Price relatives, August, 1909–July, 1914=100		Year	Weighted average farm price	Weighted average market price at Chicago	Price relatives, August, 1909–July, 1914=100	
			Farm price	Market price				Farm price	Market price
	Dollars	*Dollars*				*Dollars*	*Dollars*		
1910	8.10	8.90	111.9	111.7	1919	16.02	17.85	221.3	224.0
1911	6.30	6.70	87.0	84.1	1920	12.86	13.91	177.6	174.5
1912	6.66	7.55	92.0	94.7	1921	7.81	8.51	107.9	106.8
1913	7.44	8.35	102.8	104.8	1922	8.32	9.22	114.9	115.7
1914	7.52	8.30	103.9	104.1	1923	7.11	7.55	98.2	94.7
1915	6.56	7.10	90.6	89.1	1924	7.46	8.11	103.0	101.8
1916	8.13	9.60	112.3	120.5	1925	10.88	11.81	150.3	148.2
1917	13.46	15.10	185.9	189.5	1926	11.75	12.34	162.3	154.8
1918	15.85	17.45	218.9	218.9					

Division of Statistical and Historical Research. Farm prices from Division of Crop and Livestock Estimates; market prices from the reporting service of the Division of Livestock, Meats, and Wool.

TABLE 419.—*Hogs: Monthly slaughter under Federal inspection, 1907–1926*

Year	January	February	March	April	May	June	July
1907	3,409,531	2,920,505	2,665,112	2,667,170	3,317,281	3,240,786	2,928,806
1908	4,961,421	3,889,864	3,111,115	2,304,271	3,087,525	3,093,889	2,415,570
1909	3,875,858	2,653,412	3,012,659	2,342,999	2,629,418	2,718,569	2,097,241
1910	2,692,780	2,323,582	1,891,000	1,778,410	2,206,472	2,612,116	1,988,403
1911	2,742,393	2,632,830	2,972,692	2,589,454	3,007,507	3,462,063	2,560,236
1912	4,146,732	3,301,955	2,700,401	2,411,926	2,843,878	2,835,470	2,353,889
1913	3,708,086	2,843,947	2,383,602	2,486,664	3,045,926	3,056,948	2,557,054
1914	3,489,384	2,722,763	2,547,752	2,311,724	2,569,085	2,925,635	2,259,540
1915	4,273,788	3,885,177	3,445,787	2,563,081	2,868,655	3,245,822	2,493,385
1916	5,387,333	4,275,567	3,430,145	2,853,326	3,274,941	3,162,569	2,530,249
1917	4,628,613	3,484,014	2,984,959	2,645,077	3,083,518	2,684,844	2,411,436
1918	3,960,892	3,998,084	3,925,986	3,290,489	3,092,325	2,782,792	2,940,491
1919	5,845,696	4,266,317	3,443,330	3,207,671	3,743,463	3,728,230	2,884,325
1920	5,078,521	3,103,530	3,481,680	2,590,208	3,584,781	3,566,071	2,643,772
1921	4,347,306	3,798,687	3,047,424	3,003,290	3,274,114	3,618,152	2,820,616
1922	3,984,704	3,479,907	3,350,214	2,945,757	3,716,170	4,046,304	3,104,322
1923	5,134,029	4,230,575	4,837,791	4,179,438	4,325,130	4,302,533	3,983,435
1924	5,911,242	5,006,290	4,536,372	4,073,248	4,277,565	4,287,552	4,113,814
1925	5,978,622	4,446,936	3,299,344	3,036,716	3,186,124	3,731,501	2,819,385
1926	4,500,631	3,351,165	3,562,243	3,104,655	3,130,904	3,429,508	3,127,302

Year	August	September	October	November	December	Total
1907	2,300,785	1,988,210	2,218,979	2,134,622	3,093,590	32,885,377
1908	2,231,182	2,230,684	3,368,060	3,802,740	4,146,780	38,643,101
1909	1,821,934	1,955,445	2,397,039	2,800,080	3,090,242	31,394,896
1910	1,824,006	1,563,846	1,850,765	2,455,654	2,826,749	26,013,783
1911	2,031,911	2,171,798	2,719,927	3,639,269	3,602,875	34,132,955
1912	1,875,336	1,701,088	2,454,931	3,020,326	3,406,795	33,052,727
1913	2,268,333	2,132,735	2,681,399	3,165,206	3,918,685	34,198,585
1914	1,799,032	1,907,397	2,681,852	3,047,127	4,270,600	32,531,841
1915	2,040,506	1,890,484	2,493,831	3,738,879	5,441,833	38,381,228
1916	2,517,259	2,287,330	3,327,029	4,770,913	5,267,042	43,083,703
1917	1,704,852	1,321,674	2,195,291	3,042,827	3,722,599	33,909,704
1918	2,283,083	1,980,008	3,018,084	4,280,126	5,661,890	41,214,250
1919	1,949,413	1,997,149	2,685,711	3,270,172	4,790,853	41,811,830
1920	2,190,821	1,978,602	2,486,940	3,328,633	3,985,125	38,018,684
1921	2,530,459	2,422,850	2,866,133	3,447,027	3,806,797	38,982,355
1922	2,887,755	2,747,467	3,331,587	4,318,005	5,201,437	43,113,629
1923	3,556,039	3,212,350	4,327,951	5,340,678	5,903,759	53,333,708
1924	3,070,206	2,856,960	3,498,135	4,640,944	6,600,306	52,872,684
1925	2,452,825	2,597,887	3,314,353	3,646,155	4,533,019	43,042,867
1926	2,833,615	2,616,452	2,976,271	3,609,860	4,393,602	40,636,208

Bureau of Animal Industry.

TABLE 420.—*Hogs, pork, and pork products: Statement of livestock and meat situation, by months, 1926*

Item	Unit	January	February	March	April	May	June	July	August	September	October	November	December	Total or average
Inspected slaughter, hogs	Thousands	4,501	3,351	3,562	3,105	3,131	3,429	3,127	2,834	2,616	2,976	3,610	4,394	40,636
Carcasses condemned	do	14	12	13	11	11	13	12	13	16	21	17	16	169
Average live weight	Pounds	233	235	239	240	238	246	258	259	240	216	212	217	235
Average dressed weight	do	179	181	183	185	182	189	198	200	183	162	158	165	180
Total dressed weight (carcass, not including condemned).	1,000 pounds	802,879	604,958	649,871	572,037	568,585	646,770	616,290	563,719	475,867	479,917	568,835	722,806	7,272,534
Lard, per 100 pounds live weight	Pounds	16	17	17	17	17	16	16	16	15	14	14	15	16
Storage first of month:														
Fresh pork	1,000 pounds	57,960	98,311	120,115	129,259	124,569	117,366	120,707	133,104	119,994	77,673	49,376	55,241	100,306
Cured pork	do	414,259	457,731	489,732	497,335	479,229	457,106	481,469	509,569	503,092	436,678	356,247	332,987	451,286
Lard	do	42,478	64,187	76,145	93,108	98,365	106,824	120,527	153,572	151,233	105,558	72,355	46,744	94,258
Exports: [1]														
Fresh pork	do	2,094	2,673	1,292	1,101	614	874	505	313	773	1,223	2,771	1,331	15,564
Cured pork	do	49,438	39,918	36,655	33,918	32,198	26,149	24,431	31,464	29,769	26,568	24,790	25,340	380,638
Canned pork	do	501	575	744	680	688	457	498	624	428	538	385	344	6,462
Sausage	do	791	951	809	747	634	605	549	587	615	524	594	637	8,043
Lard	do	78,796	66,599	65,988	64,919	59,867	57,614	47,116	55,475	62,866	48,547	44,968	64,332	717,087
Imports, fresh pork	do	399	282	470	459	364	814	515	614	878	1,866	1,404	1,091	9,156
Average cost for slaughter per 100 pounds.	Dollars	12.05	12.47	12.32	12.40	13.52	14.01	12.64	11.83	12.52	12.78	11.80	11.55	12.47

Division of Statistical and Historical Research. Inspected slaughter from reports of Bureau of Animal Industry. Weights and storage holdings from reports of the cold-storage report section; exports and imports from Bureau of Foreign and Domestic Commerce.

[1] Including reexports.

TABLE 421.—*Pork: Stocks in cold-storage warehouses and meat-packing establishments, United States, 1916–1926*

[Thousand pounds—i. e., 000 omitted]

DRY SALT CURED AND IN PROCESS OF CURE

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
Average:												
1916–1920	243, 893	213, 699	345, 319	355, 433	356, 364	349, 408	323, 973	311, 047	273, 409	226, 795	181, 909	186, 673
1921–1925	128, 806	158, 231	179, 655	188, 577	190, 726	192, 211	206, 048	200, 015	178, 070	136, 806	98, 121	93, 238
1916	145, 661	194, 053	226, 910	206, 703	202, 392	206, 008	202, 088	205, 251	183, 194	140, 908	118, 958	142, 858
1917	200, 998	228, 424	259, 059	234, 396	219, 819	213, 802	224, 813	231, 905	195, 678	143, 319	110, 652	150, 882
1918	252, 934	341, 422	402, 734	448, 114	471, 809	493, 795	402, 549	370, 203	333, 472	283, 572	247, 194	283, 002
1919	357, 254	471, 747	435, 661	430, 205	425, 411	402, 652	381, 736	366, 547	338, 270	332, 786	281, 930	242, 224
1920	262, 620	332, 848	402, 229	457, 745	462, 389	430, 782	406, 681	381, 328	316, 433	233, 389	150, 812	114, 400
1921	144, 997	202, 909	251, 893	255, 390	246, 443	240, 610	250, 752	231, 511	200, 291	149, 974	108, 611	96, 731
1922	111, 071	128, 690	139, 281	145, 183	142, 036	157, 689	186, 948	179, 856	165, 668	122, 733	85, 671	83, 017
1923	121, 125	155, 922	178, 024	206, 429	227, 728	214, 453	217, 862	221, 716	191, 711	146, 974	108, 850	110, 824
1924	148, 121	167, 507	178, 258	192, 934	191, 882	206, 009	212, 158	202, 618	180, 127	135, 702	81, 460	78, 871
1925	118, 718	136, 125	150, 819	142, 950	145, 548	142, 292	162, 518	164, 374	152, 555	128, 599	106, 011	96, 746
1926	119, 617	138, 005	144, 071	151, 286	140, 324	136, 801	148, 164	168, 882	172, 766	143, 572	98, 521	66, 765

PICKLED,[1] CURED, AND IN PROCESS OF CURE

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
Average:												
1916–1920	278, 118	339, 742	380, 567	382, 009	382, 685	387, 887	394, 113	378, 975	330, 193	269, 231	225, 930	235, 713
1921–1925	351, 495	385, 108	426, 738	432, 850	434, 109	424, 442	422, 583	399, 780	370, 052	314, 821	271, 438	293, 931
1916	230, 881	298, 939	350, 750	351, 051	337, 464	326, 183	359, 300	350, 570	303, 399	251, 004	209, 061	251, 519
1917	307, 478	348, 269	378, 847	362, 931	381, 236	403, 185	412, 810	403, 704	328, 943	252, 152	192, 884	204, 907
1918	269, 003	322, 004	369, 014	402, 377	406, 191	397, 486	372, 347	365, 941	315, 517	249, 827	233, 148	242, 976
1919	303, 763	392, 260	435, 197	431, 714	434, 671	440, 989	422, 387	384, 764	341, 724	297, 712	239, 719	226, 893
1920	279, 467	337, 238	369, 026	361, 973	353, 864	371, 593	403, 719	389, 896	361, 381	295, 460	254, 838	252, 270
1921	294, 993	316, 328	376, 376	367, 553	355, 041	366, 291	366, 346	346, 623	320, 190	257, 244	212, 528	221, 345
1922	252, 822	284, 487	321, 950	347, 276	348, 305	363, 395	391, 474	385, 692	369, 187	313, 517	278, 812	302, 708
1923	377, 107	412, 806	451, 279	469, 130	499, 119	483, 673	473, 569	449, 441	413, 798	367, 374	325, 456	384, 604
1924	434, 030	468, 892	500, 784	512, 190	500, 683	483, 372	473, 914	443, 918	408, 928	351, 485	283, 710	299, 868
1925	398, 521	443, 025	483, 302	468, 099	467, 395	425, 481	407, 610	373, 227	338, 156	284, 485	256, 684	261, 128
1926	294, 642	319, 726	345, 661	346, 049	338, 905	320, 305	333, 305	340, 687	330, 326	293, 106	257, 726	266, 222

FROZEN

Average:												
1916–1920	50,702	80,496	103,516	112,200	110,797	116,101	123,485	116,731	85,360	54,844	40,144	39,028
1921–1925	94,863	141,329	175,953	190,727	186,970	180,415	176,658	151,665	110,390	68,511	42,663	45,868
1916	44,194	63,376	88,604	88,344	77,812	83,195	82,571	85,845	63,420	38,851	23,988	32,015
1917	50,564	66,062	63,352	64,996	74,728	77,534	91,562	96,648	72,286	39,767	25,347	23,504
1918	41,663	61,659	104,630	116,548	117,786	118,601	117,976	108,220	71,385	46,598	36,968	34,750
1919	61,539	104,708	128,897	142,189	139,205	144,212	155,263	131,137	90,510	61,417	47,271	44,864
1920	55,551	106,677	132,096	148,922	144,453	156,963	170,054	161,804	129,197	87,592	67,148	60,007
1921	93,990	150,594	208,889	219,964	200,706	194,486	182,163	149,435	103,486	64,682	38,517	37,513
1922	51,203	71,722	86,219	98,765	103,907	114,571	128,962	117,903	84,815	46,796	30,688	33,774
1923	72,278	120,196	154,377	189,115	213,224	210,645	217,074	195,002	148,753	98,795	71,640	82,068
1924	126,718	164,491	199,044	227,284	215,767	201,728	186,566	164,049	121,816	77,986	42,561	48,781
1925	130,125	199,642	231,234	218,506	201,246	180,645	168,527	131,935	93,078	54,294	29,910	27,153
1926	57,960	98,311	120,115	129,259	124,569	117,366	120,707	133,104	119,994	77,673	49,376	55,241

Cold Storage Report Section.

[1] Pickled pork includes sweet-pickled, plain-brine, and barreled pork.

TABLE 422.—*Lard: Total stocks in cold-storage warehouses and meat-packing establishments, United States, 1916–1926* [1]

[Thousand pounds—i. e., 000 omitted]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
Average:												
1916–1920	73,142	94,772	100,619	99,546	105,594	99,815	115,129	120,532	109,518	83,522	56,703	54,165
1921–1925	53,211	73,570	91,725	103,458	117,510	131,313	156,178	155,350	124,980	77,777	37,957	35,851
1916	63,304	92,342	111,897	97,237	108,731	85,113	87,127	95,991	82,028	71,570	56,929	58,950
1917	80,977	86,208	88,460	65,179	61,640	72,365	95,197	112,[illegible]49	102,172	69,929	37,095	44,367
1918	54,539	59,310	65,355	89,854	103,373	106,194	107,871	102,4[illegible]	104,668	90,398	76,124	81,676
1919	104,274	138,353	125,410	112,469	112,409	83,096	92,132	100,478	87,947	76,456	66,036	49,147
1920	62,614	97,649	111,975	132,993	141,819	152,307	193,316	191,531	170,774	109,258	47,329	36,683
1921	59,319	83,549	117,690	128,614	152,428	181,992	204,301	194,490	149,886	85,115	48,850	42,001
1922	47,541	61,202	61,297	86,031	96,055	123,798	154,254	143,084	119,755	75,338	36,750	32,506
1923	48,808	56,266	59,101	66,743	85,251	84,530	123,896	143,579	115,860	72,608	35,225	35,327
1924	49,340	54,130	68,610	85,722	102,317	127,949	152,520	149,672	124,676	84,198	31,706	35,713
1925	61,049	112,704	151,927	150,182	151,499	138,295	145,919	145,924	114,724	71,626	37,256	33,710
1926	42,478	64,187	76,145	93,108	98,365	106,824	120,527	153,572	151,233	105,558	72,355	46,744

Cold Storage Report Section.

[1] Lard includes all prime steam, kettle-rendered, neutral, and other pure lards. It does not include lard substitutes nor compounds.

Table 423.—*Pork and pork products: International trade, average 1911–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average, 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	1,977	9	89	4,638	200	579	50	1,416
Australia	923	6,294	[1] 2,574	[1] 2,248	[1] 1,397	[1] 3,249		
Brazil	3,767	278	183	44,693	182	7,104		64
Canada	29,189	47,694	54,602	108,273	28,365	139,205	18,821	156,717
Chile	3,195	9	264	282	156	1,482		
China		7,679		8,515	357	10,110	378	17,204
Denmark	7,124	298,086	4,758	420,353	4,095	475,551	3,335	462,925
Hungary			12,398	140	7,504	2,663	257	51,693
Irish Free State					58,318	104,690	63,316	78,280
Netherlands	88,143	139,916	33,230	133,061	24,718	228,747	13,962	259,464
New Zealand	248	1,049	3	4,562	46	3,438	139	5,784
Poland			124	39	41,881	14,578	26,339	57,735
Russia		28,871						
Sweden	6,736	19,445	19,712	33,588	14,691	41,797	15,449	17,041
United States	171	1,019,561	1,101	1,995,920	5,683	1,681,654	7,235	1,241,209
PRINCIPAL IMPORTING COUNTRIES								
Austria			102,106	618	74,890	1,780	47,504	575
Austria-Hungary	14,338	3,343						
Belgium	22,232	16,254	44,331	12,126	28,108	10,044	21,376	3,096
Cuba	85,973		143,833		167,824			
Czechoslovakia			140,229	562	127,407	2,196	83,160	3,703
Finland	(2)	(2)	15,724	275	15,794	361	9,312	895
France	59,824	24,668	146,781	5,511	161,278	4,740	57,023	3,333
Germany	265,669	3,532	419,087	1,412	438,416	1,189	412,163	2,819
Italy	74,861	(2)	23,333	3,230	38,476	1,503	13,346	1,502
Norway	9,751	26	25,507	20	17,268	17	13,595	
Peru	(2)	(2)	9,391	18	15,432		12,848	
Philippine Islands	4,414		6,207		6,498		5,823	
Spain	553	641	3,877	797	6,552	1,302	975	1,790
Switzerland	21,976	105	15,922	40	13,170	69	6,550	819
Union of South Africa	8,249	30	1,378	184	1,863	140	1,497	96
United Kingdom	875,929	15,820	1,435,996	5,928	1,420,893	6,193	1,373,856	6,162
Other countries	47,140	4,835	92,787	15,094	44,301	19,231	48,372	22,569
Total	1,632,382	1,638,145	2,755,527	2,802,127	2,765,763	2,763,612	2,256,701	2,396,891

Division of Statistical and Historical Research. Official sources.

[1] Year beginning July 1. [2] Not separately stated.

Table 424.—*Lard, pure: Average price per 100 pounds, Chicago, by months, 1909–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909–1913	10.29	10.18	10.60	10.33	10.68	10.77	10.75	10.89	11.24	11.20	10.92	10.71	10.72
1914–1920	16.99	17.46	18.11	18.74	19.37	19.33	19.23	18.77	18.87	19.47	19.78	18.32	18.70
1921–1925	14.51	14.16	14.59	13.74	13.37	13.74	14.38	14.93	15.35	15.66	15.20	14.85	14.55
1909	9.57	9.52	10.05	10.32	10.60	11.54	11.52	11.66	12.23	12.17	12.93	13.12	11.27
1910	12.43	12.50	14.08	12.33	12.95	12.27	11.85	11.82	12.44	12.93	10.82	10.31	12.23
1911	10.32	9.50	8.83	7.93	8.03	8.17	8.30	8.97	9.32	8.85	9.07	9.00	8.86
1912	9.24	8.90	9.37	10.06	10.77	10.87	10.57	10.73	11.08	11.47	11.15	10.46	10.39
1913	9.88	10.50	10.66	11.00	11.05	10.99	11.53	11.28	11.15	10.09	10.63	10.68	10.83
1914	10.89	10.67	10.52	10.23	9.95	10.03	10.08	9.69	9.68	10.22	10.89	10.05	10.24
1915	10.69	10.53	9.84	9.95	9.71	9.39	8.05	7.92	8.13	9.07	8.94	9.47	9.31
1916	10.32	9.99	10.79	11.77	12.80	12.87	13.12	13.44	14.47	15.34	16.91	16.66	13.21
1917	15.66	17.00	19.30	21.00	22.30	21.41	20.77	22.40	24.03	24.29	27.13	25.46	21.73
1918	24.39	26.05	26.07	25.44	24.53	24.50	26.09	26.78	26.98	26.06	26.69	25.31	25.79
1919	23.46	24.83	27.35	30.09	33.58	34.15	34.76	30.01	26.19	27.41	25.86	23.11	28.40
1920	23.52	23.14	22.93	22.71	22.75	22.98	21.71	21.16	22.58	23.28	22.07	18.15	22.25
1921	16.03	14.91	14.48	13.07	11.88	12.03	13.94	13.65	13.51	12.16	11.62	11.25	13.21
1922	11.19	12.59	13.50	12.62	13.15	13.22	13.06	13.30	13.00	14.12	13.78	13.31	13.07
1923	13.20	13.25	13.87	13.42	13.12	13.18	12.84	12.83	15.06	15.22	15.72	15.04	13.90
1924	14.52	13.03	12.84	12.50	12.19	12.13	13.65	15.94	16.25	18.05	16.68	18.00	14.65
1925	17.59	17.03	18.25	17.07	16.50	18.13	18.42	18.94	18.95	18.75	18.50	16.67	17.90
1926	16.81	16.44	16.70	16.75	17.13	18.48	18.00	17.38	17.50	16.75	15.75	15.25	16.91

Division of Statistical and Historical Research. Prior to February, 1920, figures compiled from the National Provisioner; subsequent figures compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Prices, 1905–1908, are available in 1925 Yearbook, p. 1143, Table 553.

TABLE 425.—*Pork, carcass: Average price per pound in Great Britain, 1909–1926*

FIRST QUALITY FRESH BRITISH PORK

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1909–1913	14.2	14.2	14.2	14.1	13.8	13.9	13.5	13.7	14.3	14.9	14.9	15.1	14.2
1914–1920	23.8	24.6	25.3	26.9	25.7	25.5	25.6	24.9	26.1	26.9	27.0	26.9	25.8
1921–1925	25.6	24.6	24.5	25.1	25.0	21.9	20.4	21.6	23.5	24.0	24.3	25.0	23.6
1909	12.8	12.8	12.9	13.0	12.7	12.9	13.2	13.2	13.5	14.2	14.8	15.2	13.5
1910	15.1	15.0	15.0	14.8	14.7	14.1	13.9	14.6	15.0	15.4	15.3	14.9	14.8
1911	14.5	14.2	14.2	14.0	13.2	14.6	12.2	12.2	12.7	13.2	12.8	12.5	13.2
1912	12.7	12.7	12.8	12.8	12.5	12.6	12.8	13.0	14.4	15.1	15.1	15.7	13.5
1913	16.1	16.3	16.3	16.1	15.8	15.5	15.5	15.6	16.0	16.4	16.7	17.1	16.1
1914	16.8	16.2	16.2	15.8	14.5	13.9	13.3	14.5	15.1	16.5	16.4	16.3	15.5
1915	15.8	15.9	16.4	17.2	17.0	16.8	16.7	16.9	18.8	20.0	21.4	21.4	17.9
1916	20.1	21.6	21.6	23.6	21.9	21.7	21.7	21.7	23.8	25.4	25.0	26.1	22.8
1917	26.9	27.2	27.7	28.2	26.4	27.2	28.6	25.5	29.1	28.2	28.2	28.2	27.6
1918	28.2	28.2	28.2	31.8	31.8	31.7	31.7	31.8	31.8	34.2	35.7	35.7	31.7
1919	32.1	31.8	31.2	31.0	31.1	30.8	29.5	28.5	27.9	27.8	27.2	26.3	29.6
1920	26.8	[1]31.0	[1]36.0	41.0	37.2	36.1	37.6	35.4	36.[illegible]	36.4	34.9	34.2	35.2
1921	32.5	29.7	29.7	30.5	29.0	24.9	22.9	23.5	24.5	22.8	22.5	23.2	26.3
1922	22.5	23.9	24.4	25.3	25.0	23.0	23.9	24.7	26.6	27.3	28.5	30.3	24.5
1923	29.6	28.0	27.0	26.8	30.7	24.5	20.7	20.4	22.4	23.0	22.3	21.5	24.7
1924	20.4	19.2	18.5	19.2	18.1	16.6	14.1	18.1	19.0	20.2	20.5	21.0	18.7
1925	23.0	22.0	22.9	23.6	22.3	20.4	20.6	21.4	24.8	26.5	27.3	28.9	23.6
1926	28.3	27.9	28.0	27.1	27.6	26.0	26.4	26.6	28.8	30.3	29.8	29.3	28.0

Division of Statistical and Historical Research. Compiled from Agricultural Statistics 1909–1922, and Agricultural Market Report, 1923–1926 Ministry of Agriculture and Fisheries, Great Britain. Converted to cents per pound on the basis of the monthly average rate of exchange as given in Federal Reserve Bulletins.

TABLE 426.—*Bacon, Wiltshire sides,*[1] *green, firsts: Average price per pound at Bristol, England, 1909–1925*

Year and month	American	Canadian	Danish	Irish	British	Year and month	American	Canadian	Danish	Irish	British
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*		*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1909–1913	14.2	14.8	15.6	16.1	17.0	1917	30.1	------	------	33.0	33.6
1914–1920	27.1	------	------	------	30.1	1918	38.5	------	------	------	30.3
1921–1925	20.0	23.3	27.0	29.1	30.0	1919	37.1	37.9	------	38.4	38.4
						1920	31.6	33.1	34.2	41.7	42.8
1909	13.6	14.3	15.0	15.9	16.7						
1910	15.2	15.6	15.9	16.6	17.8	1921	21.8	26.5	32.8	34.7	36.2
1911	12.8	13.1	14.3	14.8	15.8	1922	21.2	25.2	29.7	32.5	33.3
1912	13.8	14.5	15.9	15.8	16.3	1923	17.5	20.9	23.6	25.8	27.0
1913	15.8	16.3	17.1	17.4	18.4	1924	16.6	19.2	21.3	22.8	23.5
1914	15.5	15.7	16.4	17.6	18.2	1925	23.0	24.7	27.5	29.7	30.0
1915	17.0	18.4	20.4	20.8	21.4						
1916	19.8	22.0	24.0	24.7	26.0	1926	------	------	27.8	30.7	32.3
1925						1926					
January	19.5	21.9	25.7	26.9	27.0	January	24.1	26.5	29.4	31.3	32.6
February	18.5	21.2	24.7	27.3	27.5	February	22.7	26.0	28.0	31.3	32.6
March	21.1	22.7	25.5	28.6	29.4	March	22.2	25.8	27.7	31.5	33.1
April	22.0	23.5	26.8	29.4	29.9	April	22.2	26.7	29.8	32.2	33.5
May	21.3	23.2	26.5	29.3	29.5	May	24.1	------	31.1	32.6	33.9
June	23.6	25.1	26.7	30.2	29.9	June	25.6	26.3	28.6	33.0	33.5
July	24.1	24.3	26.5	29.0	29.4	July	25.2	25.6	28.7	32.4	33.5
August	26.4	28.1	29.6	30.9	31.6	August	25.0	26.6	29.3	31.1	33.5
September	26.6	27.5	30.0	32.7	32.9	September	23.2	24.8	27.2	29.6	32.9
October	24.9	25.9	29.8	31.2	31.2	October	22.0	22.4	25.8	28.5	31.5
November	24.2	25.7	28.2	29.8	30.2	November	22.4	22.3	24.6	27.7	29.1
December	25.7	27.4	30.0	31.3	32.4	December	------	21.2	21.0	27.7	28.1

Division of Statistical and Historical Research. Compiled from Agricultural Market Report, Ministry of Agriculture and Fisheries, Great Britain, average for the last week of each month. Converted to cents per pound on the basis of the monthly average rate of exchange as given in Federal Reserve Bulletins.

[1] Entire half of hog in one piece, head off, backbone out, ribs in.

TABLE 427.—*Lard, American prime western steam: Average price per pound in Liverpool, 1909–1925*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Av.
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1909–1913	11.5	11.6	11.8	11.7	11.8	11.9	11.9	12.1	12.5	12.5	12.5	12.1	12.0
1921–1925	16.2	16.0	14.9	14.0	13.6	14.0	14.5	14.9	15.0	15.2	15.5	15.0	14.9
1909	10.7	10.6	11.2	11.4	11.8	12.7	12.8	12.8	13.4	13.6	14.7	14.9	12.6
1910	14.1	14.0	15.5	14.8	14.5	13.7	13.3	13.1	13.6	13.8	12.7	11.5	13.7
1911	11.5	11.4	10.0	9.1	9.2	9.1	9.1	9.9	10.4	9.9	10.2	10.1	10.0
1912	10.2	10.0	10.2	10.9	11.4	11.6	11.4	11.8	12.4	13.0	12.6	11.9	11.4
1913	11.2	11.8	12.2	12.4	12.3	12.2	12.7	12.7	12.6	12.1	12.2	12.1	12.2
1914	12.3	11.8	11.5	11.3	10.8	10.9	11.0	12.6	11.4	11.3	12.2	11.7	11.6
1915	12.0	11.6	11.1	11.2	11.1	10.6	9.3	8.3	8.9	10.2	10.8	11.7	10.6
1916	12.7	12.4	13.8	15.4	16.5	15.7	15.4	15.7	17.3	18.3	20.3	20.1	16.1
1917	20.4	[1] 24.8	29.3	27.7	26.3	23.8	23.8	25.0	[2] 25.9	[1] 27.1	28.2	28.6	25.9
1918	28.6	------	------	------	31.7	31.7	------	------	33.2	33.0	------	------	------
1919	------	------	------	------	------	38.1	37.1	36.3	36.5	36.8	35.6	32.9	------
1920	32.0	29.5	32.9	27.2	------	27.4	26.7	------	------	------	23.8	24.2	------
1921	23.4	[2] 23.3	15.7	13.2	11.7	12.1	13.6	13.4	13.2	12.2	12.6	11.7	14.7
1922	11.3	12.9	13.1	12.8	13.6	13.5	13.2	13.3	12.7	13.2	14.1	13.6	13.1
1923	13.3	13.0	13.7	13.6	12.9	13.0	12.7	12.7	14.0	14.5	15.7	15.1	13.7
1924	14.8	13.1	13.2	12.7	12.3	12.2	13.7	15.8	15.8	18.1	17.2	18.1	14.8
1925	18.0	17.5	18.7	17.8	17.6	19.1	19.3	19.2	19.2	17.9	17.8	16.6	18.2
1926	17.2	16.5	16.5	16.0	17.6	18.4	17.8	17.0	16.6	15.8	14.2	14.3	16.5

Division of Statistical and Historical Research. Compiled from Manchester Guardian. An average of Friday quotations. Converted to cents per pound on the basis of the monthly average rate of exchange as given in Federal Reserve Bulletins.

[1] Interpolated. [2] Government control of prices began Sept. 3, 1917, and ended on Feb. 28, 1921.

TABLE 428.—*Hogs: Cholera-control work by Bureau of Animal Industry, 1919–1926*

Year ended June 30, and State	Bureau veterinarians engaged in work [1]	Premises investigated	Demonstrations		Autopsies performed	Farms quarantined or carded	Farms cleaned and disinfected	Outbreaks reported to bureau veterinarians
			Number	Hogs treated				
1919	180	93,512	----------	233,987	53,586	9,564	4,382	12,336
1920	140	46,125	3,037	347,702	10,963	6,129	2,099	9,788
1921	54	29,433	3,420	67,295	3,888	2,268	656	7,951
1922	80	47,137	4,343	88,846	5,390	1,401	439	7,920
1923	70.91	52,348	5,234	108,562	5,247	1,772	741	7,204
1924	45.22	29,443	3,178	78,007	3,686	1,634	847	7,225
1925	34.04	24,060	2,353	51,331	2,383	886	470	3,437
1926								
Alabama	1.33	887	409	6,094	24	----------	----------	98
Arkansas	.7	283	36	1,098	13	----------	----------	292
California	.5	108	20	1,022	65	1	----------	22
Colorado	.15	29	2	145	27	----------	----------	9
Florida	2	1,180	1,207	34,731	133	1	2	228
Georgia	1.5	965	178	3,621	57	----------	----------	142
Idaho	1	726	7	442	36	12	6	12
Illinois	2	1,450	4	276	290	123	224	365
Indiana	2.25	1,196	3	98	189	51	1	205
Iowa	2.25	1,120	5	254	166	----------	----------	415
Kansas	.25	25	1	17	34	----------	----------	28
Kentucky	1.33	2,067	53	1,295	117	----------	----------	82
Louisiana	.5	152	73	1,069	8	----------	----------	56
Maryland	2	2,549	15	374	162	227	4	284
Mississippi	.83	764	49	909	6	----------	----------	34
Missouri	1.33	668	8	943	88	----------	1	177
Montana	.1	19	----------	----------	----------	9	----------	16
Michigan	1.3	968	41	1,992	153	----------	3	306
Nebraska	.5	123	----------	----------	187	----------	----------	50
North Carolina	.5	196	37	1,352	34	----------	----------	[illegible]

[1] Fractions denote veterinarians devoting a part of their time to the work.

TABLE 428.—*Hogs: Cholera-control work by Bureau of Animal Industry, 1919–1926*—Continued

Year ended June 30, and State	Bureau veterinarians engaged in work	Premises investigated	Demonstrations		Autopsies performed	Farms quarantined or carded	Farms cleaned and disinfected	Outbreaks reported to bureau veterinarians
			Number	Hogs treated				
North Dakota	1	234			91	204	91	264
Ohio	1.25	1,058	6	278	36			358
Oklahoma	2	1,235	38	2,077	30	34		39
South Carolina	1	268	249	4,007	12			53
South Dakota	1	220	1	130	57			69
Tennessee	1.25	347	23	743	72	64	1	444
Texas	1.5	399	4	514	8	6		61
Utah	.5	9			2	2	3	2
Virginia	1	688	37	800	161		5	148
Washington	.5	74	13	2,350	21	4	3	21
West Virginia	.1	21			3	4		105
Wisconsin	2	571	60	2,599	164	52	3	164
Total	35.02	20,599	2,579	69,230	2,446	854	347	4,558

Bureau of Animal Industry.

NOTE.—Owing to the emergency created by the outbreak of foot-and-mouth disease in Texas and California, it was necessary to assign many of the veterinarians from the hog-cholera force to the eradication of foot-and-mouth disease for part of the years 1925 and 1926.

TABLE 429.—*Sheep: Number and value on farms, United States, January 1, 1920–1927*

Year	Number	Value per head Jan. 1	Total value Jan. 1	Year	Number	Value per head Jan. 1	Total value Jan. 1
	Thousands	*Dollars*	*1,000 dollars*		*Thousands*	*Dollars*	*1,000 dollars*
1920	40,243	10.46	420,863	1924	36,876	7.91	291,626
1921	38,690	6.28	242,781	1925	38,112	9.70	369,612
1922	36,186	4.80	173,862	1926	39,864	10.51	418,965
1923	36,212	7.53	272,681	1927 [1]	41,909	9.70	406,531

Division of Crops and Livestock Estimates.

[1] Preliminary.

TABLE 430.—*Sheep and lambs: Estimated number and value on farms, by States, January 1, 1920–1927*

State	Number, January 1—								Value per head, January 1—								Total value, January 1—							
	1920	1921	1922	1923	1924	1925	1926	1927 [1]	1920	1921	1922	1923	1924	1925	1926	1927	1920	1921	1922	1923	1924	1925	1926	1927 [1]
	Thousands	*Thousands*	*Thousands*	*Thousands*	*Thousands*	*Thousands*	*Thousands*	*Thousands*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Maine	119	99	86	83	84	89	95	99	9.61	5.60	4.80	6.70	7.10	7.60	8.00	8.30	1,143	550	410	554	595	677	764	822
New Hampshire	28	25	20	19	17	18	19	20	9.80	7.40	5.80	8.00	7.40	8.10	8.60	9.00	274	184	115	152	126	146	163	181
Vermont	63	52	42	40	43	40	43	44	11.60	6.80	5.10	7.10	7.50	8.30	8.90	9.40	728	352	213	285	324	331	383	412
Massachusetts	19	17	15	13	12	12	11	12	13.20	9.90	7.10	7.20	8.20	9.70	9.40	9.80	250	168	107	94	98	116	104	118
Rhode Island	3	2	2	2	2	2	2	2	11.70	10.00	6.50	8.00	8.00	10.00	9.50	10.00	35	20	13	16	16	20	19	20
Connecticut	11	10	9	8	8	8	8	7	12.60	9.70	7.90	8.10	8.20	9.40	10.20	10.10	139	97	71	65	66	75	82	71
New York	579	527	474	446	442	473	497	477	12.18	7.50	5.80	8.50	9.20	10.60	11.60	10.80	7,055	3,931	2,739	3,773	4,082	5,029	5,756	5,157
New Jersey	10	9	8	7	6	6	6	6	11.20	11.10	7.80	7.70	9.30	9.50	10.80	11.80	112	100	62	54	56	57	65	71
Pennsylvania	509	478	468	449	431	415	415	411	11.50	7.50	5.70	7.10	7.70	8.80	9.70	9.40	5,856	3,598	2,679	3,201	3,333	3,665	4,010	3,860
Ohio	2,103	1,998	1,869	1,906	1,925	1,941	2,000	2,080	10.00	5.70	4.60	7.10	7.30	8.90	9.50	8.50	21,125	11,347	8,682	13,484	14,139	17,277	18,922	17,624
Indiana	644	606	545	563	582	595	647	699	11.80	6.60	5.20	8.00	8.40	10.60	11.60	10.20	7,603	4,025	2,827	4,509	4,867	6,297	7,500	7,138
Illinois	638	623	525	509	574	556	710	800	12.60	6.90	5.30	7.80	8.20	10.40	11.30	10.00	8,047	4,297	2,795	3,997	4,701	5,782	8,035	7,970
Michigan	1,209	1,113	1,002	1,052	1,052	1,066	1,173	1,314	11.70	6.80	5.20	8.10	8.30	11.20	13.00	10.40	14,193	7,546	5,264	8,484	8,754	11,898	14,049	13,719
Wisconsin	480	430	366	329	343	360	401	461	10.90	6.30	4.60	7.50	8.10	10.20	11.00	9.80	5,237	2,720	1,676	2,470	2,767	3,685	4,399	4,507
Minnesota	509	519	467	408	428	462	540	670	11.00	6.00	4.70	7.20	7.90	10.60	11.20	9.70	5,582	3,138	2,199	2,920	3,397	4,920	6,056	6,529
Iowa	1,092	1,059	852	840	900	870	913	1,077	12.10	6.90	5.40	8.40	8.30	11.20	11.80	10.20	13,234	7,281	4,604	7,083	7,448	9,698	10,739	10,978
Missouri	1,272	1,220	976	937	928	894	940	986	12.20	6.00	4.50	7.10	7.60	9.40	10.00	9.70	15,521	7,300	4,369	6,662	7,051	8,442	9,365	9,549
North Dakota	299	254	203	204	245	311	373	399	11.00	5.70	4.70	7.30	7.80	9.90	11.20	10.20	3,274	1,458	945	1,491	1,916	3,070	4,188	4,074
South Dakota	844	725	674	663	639	682	700	721	10.20	5.60	4.50	7.70	7.80	10.50	10.80	9.90	8,625	4,051	3,042	5,106	5,364	7,173	7,525	7,131
Nebraska	750	690	600	840	800	780	810	620	9.80	5.40	5.10	8.00	7.90	10.50	10.30	8.70	7,382	3,751	3,066	6,760	6,292	8,163	8,353	5,396
Kansas	505	464	454	345	314	384	452	500	11.60	5.90	4.80	7.30	7.10	9.10	9.80	9.20	5,883	2,720	2,168	2,514	2,234	3,498	4,406	4,598
Delaware	3	3	2	2	2	2	2	2	10.30	7.30	6.00	7.50	7.00	10.00	10.00	10.00	31	22	12	15	14	20	20	20
Maryland	103	98	95	95	91	92	96	98	11.00	8.00	6.20	7.50	8.50	9.50	10.40	10.30	1,128	784	587	711	770	873	999	1,009
Virginia	342	345	321	331	338	351	362	380	11.80	7.50	5.60	7.60	8.00	8.90	10.10	10.30	4,039	2,601	1,782	2,522	2,722	3,139	3,667	3,912
West Virginia	510	520	520	500	475	485	485	509	10.60	6.40	4.80	6.90	7.28	8.20	9.40	10.10	5,433	3,319	2,505	3,450	3,458	3,982	4,536	5,146
North Carolina	91	95	86	80	70	67	73	77	9.60	6.60	4.90	5.60	6.40	6.20	6.60	7.40	869	628	420	452	450	419	483	566
South Carolina	24	19	18	15	14	14	13	14	7.20	3.70	3.10	4.40	4.80	4.40	4.10	4.90	174	71	55	66	67	61	53	68
Georgia	72	75	68	63	53	51	51	51	4.90	4.20	2.70	3.00	2.60	3.40	3.20	3.60	351	313	183	188	137	172	166	184
Florida	65	63	63	62	61	60	59	59	5.20	3.50	3.10	3.50	2.90	3.30	3.00	3.20	336	223	198	216	176	198	179	189
Kentucky	708	701	687	690	700	715	751	826	11.20	6.40	5.00	7.00	7.90	8.90	10.10	10.70	7,944	4,505	3,409	4,812	5,529	6,360	7,565	8,842

Tennessee	364	349	330	320	304	292	286	300	10.90	5.80	4.00	5.50	5.90	5.90	7.40	10.10	3,971	2,016	1,327	1,766	1,784	1,723	2,117	3,038
Alabama	82	85	78	73	61	57	48	53	5.70	4.40	2.70	3.40	4.00	4.30	3.90	3.70	471	371	211	251	242	244	186	198
Mississippi	164	148	142	128	122	114	108	76	6.30	3.10	3.00	2.70	2.80	2.90	3.00	3.30	1,036	500	421	340	543	328	329	254
Arkansas	100	96	85	74	63	52	49	51	7.60	4.50	3.00	3.00	3.30	3.90	4.80	5.80	763	409	252	226	206	201	236	315
Louisiana	130	124	124	122	110	109	105	102	5.40	3.80	2.80	2.90	3.10	3.20	3.00	3.00	700	474	342	356	362	345	312	308
Oklahoma	105	90	83	55	63	64	70	81	10.60	6.20	4.40	5.80	5.90	7.30	8.80	9.20	1,118	559	363	321	369	466	617	773
Texas	2,800	3,080	3,053	2,931	3,300	3,500	3,535	4,242	10.00	6.20	3.60	5.40	6.10	7.50	8.10	7.90	27,918	19,172	10,874	15,936	20,274	26,376	28,723	33,598
Montana	2,450	2,230	2,460	2,370	2,441	2,579	2,880	2,736	10.20	5.70	4.70	8.70	8.70	10.40	11.40	10.60	25,069	12,632	11,465	20,569	21,304	26,851	32,797	28,952
Idaho	2,356	2,121	2,016	2,046	1,946	1,960	1,880	1,974	10.70	6.30	6.00	8.40	8.90	10.90	11.80	10.80	25,309	13,415	12,046	17,214	17,322	21,397	22,239	21,326
Wyoming	3,000	2,875	2,676	2,520	2,520	2,700	2,870	3,100	10.20	6.20	5.40	8.90	9.00	10.80	11.50	10.10	30,595	17,875	14,384	22,506	22,598	29,098	32,997	31,261
Colorado	1,964	2,247	1,940	2,449	2,327	2,565	2,537	1,845	9.10	5.40	4.70	7.40	7.40	10.30	10.50	9.50	17,891	12,091	9,049	18,185	17,194	26,306	26,704	17,544
New Mexcio	2,250	2,205	2,085	1,877	2,007	2,100	2,184	2,490	9.20	5.90	3.90	6.50	6.50	8.50	9.50	8.80	20,697	12,986	8,124	12,125	12,983	17,794	20,740	21,789
Arizona	1,350	1,310	1,245	1,243	1,181	1,164	1,220	1,270	10.10	7.00	4.90	6.30	7.00	8.20	8.90	9.00	13,645	9,102	6,064	7,841	8,324	9,535	10,907	11,477
Utah	2,410	2,290	2,335	2,380	2,425	2,355	2,472	2,650	9.90	6.60	5.00	9.10	8.80	11.30	12.00	10.80	23,762	15,086	11,654	21,730	21,395	26,579	29,631	28,742
Nevada	1,340	1,160	1,125	1,190	1,060	1,100	1,175	1,260	10.30	7.40	5.10	8.70	9.00	11.00	11.70	10.60	13,834	8,622	5,736	10,372	9,529	12,045	13,721	13,380
Washington	624	531	451	465	497	516	478	526	10.90	6.80	5.80	8.10	8.80	11.20	12.10	11.00	6,782	3,637	2,400	3,775	4,363	5,751	5,777	5,797
Oregon	2,250	2,160	1,966	1,868	1,924	2,039	2,120	2,226	10.70	6.60	4.40	6.40	8.40	10.40	11.50	10.40	24,035	14,264	8,742	12,000	16,094	21,172	24,302	23,092
California	2,900	2,750	2,475	2,600	2,890	3,045	3,200	3,500	10.90	6.70	5.30	8.10	9.00	9.20	10.60	9.90	31,664	18,470	13,211	21,062	25,991	28,140	34,078	34,805
United States	40,243	38,690	36,186	36,212	38,876	38,112	39,864	41,909	10.46	6.28	4.80	7.53	7.91	9.70	10.51	9.70	420,863	242,781	173,862	272,681	291,626	369,612	418,965	406,531

Division of Crops and Livestock Estimates.

¹ Preliminary.

Table 431.—*Sheep: Number in countries having 100,000 and over, pre-war and years 1921–1926*

[Thousands—i. e., 000 omitted]

Country	Month of estimate	Average pre-war [1]	1921	1922	1923	1924	1925	1926
NORTH AMERICA, CENTRAL AMERICA, AND WEST INDIES								
Canada	June	2,208	3,676	3,264	2,754	2,685	2,756	2,877
United States [2]	January	51,929	37,452	36,327	37,223	38,300	38,112	39,864
Mexico	June	[3] *3,424*			1,382	1,728	1,162	2,381
Guatemala		514	185	113	248	114	148	
Dominican Republic				134	147	162		
Total North America, Central America, and West Indies comparable all periods		54,137	41,128	39,591	39,977	40,985	40,868	42,741
Estimated total [4]		58,480	43,065	41,460	41,998	43,240	42,591	
SOUTH AMERICA								
Columbia		[5] 246				771		
Venezuela		177	113					
Peru				11,056	*11,034*			
Bolivia		1,750						
Chile		3,477		4,569			4,094	
Brazil	September	10,550	[6] *7,933*					
Uruguay		[7] *26,286*	[5] *11,473*			*14,443*		
Paraguay	December [8]	[9] 600						
Argentina	do.[8]	[10] *43,225*			*36,209*			
Falkland Islands	do [8]	711	668	666	647	635		
Estimated total [4]		93,220	Estimated average, 1921–1925, [1] 78,050					
EUROPE								
Iceland		589	554	571	550			
England and Wales	June	18,346	13,832	13,438	13,836	14,843	15,975	16,859
Scotland	do.	7,028	6,659	6,684	6,786	6,886	7,119	7,189
Ireland	do	3,787	3,708	3,567	3,458	3,235	3,297	
Norway [11]	do.	[12] 1,398	957	1,000	1,525	1,507	1,529	1,595
Sweden	do	1,205	[6] 1,568					
Denmark	July	533	522	442	374	302	261	235
Faroe Islands (Danish)		112			69	64		
Holland	May-June	842	668					
Belgium	December [8]	189	[6] 126					
France	do.[8]	16,176	9,406	9,600	9,782	9,925	10,172	10,537
Spain	do.[8]	15,778		20,522	19,377	18,550	18,460	20,067
Portugal		[13] 3,073	[6] 3,851				3,684	
Italy	March-April	11,615	[14] [15] 12,029			12,000		
Switzerland	Apr.	*161*	*245*					169

[1] Average for 5-year period, if available. Otherwise for any year or years within this period except as otherwise stated. In countries having changed boundaries the pre-war figures are estimates for one year only of numbers within present boundaries. For the pre-war average the years immediately preceding the war have been used.

[2] Revised estimates of the Division of Crop and Livestock Estimates 1921–1926. The number of sheep on Jan. 1, 1927, is officially estimated at 41,909,000. No 1927 column has been added, as so few estimates are available for that year, as yet. These figures are made on the basis of census figures for 1920 and 1925, of annual assessment data and other information. The estimates prepared in the Bureau of Animal Industry by adjustment of the census figures to a Jan. 1 basis and including all animals in towns and villages as well as on farms and ranges are as follows: Average, 58,900,000; 1921, 67,200,000; 1922, 67,700,000; 1923, 68,900,000; 1924, 68,200,000; and 1925, 66,600,000.

[3] Year 1902.

[4] These totals include countries with less than 100,000, interpolations for a few countries not reporting each year, and rough estimates for some others.

[5] Year 1916.

[6] Year 1920.

[7] Year 1908.

[8] Countries reporting as of December have been considered as of Jan. 1 of following year; i. e., figure for number of sheep in France as of Dec. 31, 1920 have been put in 1921 column.

[9] Year 1915.

[10] June, 1914. Official estimates for 1921 and 1922 are as follows: 1921, 45,996,000; 1922, 46,134,000. These figures indicate an increase compared with 1914, while census for 1922 shows a decrease, so the annual estimates have not been used in this table.

[11] In rural communities only.

[12] September.

[13] Year 1906.

[14] Year 1918.

[15] Estimated for present boundaries. The number in former boundaries on Apr. 6, 1918, was 11,753,910.

TABLE 431.—*Sheep: Number in countries having 100,000 and over, pre-war and years 1921–1926*—Continued

[Thousands—i. e., 000 omitted]

Country	Month of estimate	Average pre-war	1921	1922	1923	1924	1925	1926
EUROPE—continued								
Germany	December [8]	4,988	6,150	5,891	5,566	[16] 6,105	5,735	4,743
Austria	do.[8]	301	454		597			
Czechoslovakia	do.[8]	1,322	986			[17] 1,426		
Hungary	April	2,406		1,352	1,587	1,814	1,891	1,804
Yugoslavia	January	10,496	*7,011*	8,462	7,639	7,619	7,907	
Greece		5,881	5,789	5,961	5,643			
Bulgaria	December [8]	8,551	*8,923*				7,450	
Rumania		11,128	8,690	11,195	12,321	12,481	13,612	12,950
Poland		4,268	2,306			2,500		
Lithuania		1,152	1,073	1,228	1,413	1,399	1,455	
Latvia	June	996	1,132	1,161	1,488	1,235	1,182	1,153
Estonia		486	531	745	666	607	720	666
Finland	September	1,330	1,572	1,571	1,550	1,485		
Russia	Summer	43,154	41,033	33,060	47,371	56,191	63,493	
Total Europe, comparable all periods		61,079	47,879	50,156	52,344	53,891	56,305	55,927
Estimated total [4]		177,320	161,717	157,313	171,783	180,770	190,248	
AFRICA								
Morocco		[9] 3,175	6,733	6,319	7,121	8,215	9,278	
Algeria	September	8,757	6,333	6,025	5,397	[19] 4,605	6,171	
Libia (Italian)		996						
Tunis		705	2,038	1,920	1,451	1,379	972	
French West Africa (excluding Sudan)			3,802	3,681				
French Sudan			2,164	2,030	2,324			
Gold Coast [18]		250	*352*	375	400	420	320	
Nigeria			1,909	1,832	1,697	1,487	1,479	
French Cameroon [18]				298	250			
Egypt	September	816	986	942	962	1,085	1,091	
Anglo Egyptian Sudan			1,660	1,619	1,632	1,638	1,639	
Italian Somaliland			[6] 1,666					
Eritrea (Italian)		[18] 1,585	[6] *1,263*	[18] 1,701				
Kenya Colony	March–June	5,469	2,741	2,464	2,547	2,568	2,679	
Uganda		612	222	267	304	531	604	
Belgian Congo		300	300	300	300	310	310	
British Southwest Africa		555	927	1,033	937	905	966	
Bechuanaland		[18] *358*	*132*					
Union of South Africa		*30,657*	*31,730*	*31,696*	*31,418*	*32,003*	*35,570*	
Basutoland		*1,369*	*1,860*	1,904	1,953	2,002	2,051	
Southern Rhodesia	December [8]	300	331	317	325	340	349	
Swaziland		*164*	*57*	38	76	77		
Tanganyika Territory		[18] 2,793	[18] *3,405*		[18] 3,940		4,333	
Madagascar		318	110		110			
Total Africa, comparable all periods to 1925		52,965	54,553	53,562	53,115	54,363	60,361	
Estimated total [4]		71,710	Estimated average, 1921–1925,[1] 74,800					

[1] Average for 5-year period, if available. Otherwise for any year or years within this period except as otherwise stated. In countries having changed boundaries the pre-war figures are estimates for one year only of numbers within present boundaries. For the pre-war average the years immediately preceding the war have been used.

[4] These totals include countries with less than 100,000, interpolations for a few countries not reporting each year, and rough estimates for some others.

[6] Year 1920.

[8] Countries reporting as of December have been considered as of Jan. 1 of following year; i. e., figure for number of sheep in France as of Dec. 31, 1920 have been put in 1921 column.

[9] Year 1915.

[16] No census was made as of December, 1923, which estimate would have been considered as of January, 1924, in this table, as explaimed in note 8, so the figure for October, 1923, has been used.

[17] Unofficial.

[18] Goats included.

[19] Incomplete.

TABLE 431.—*Sheep: Number in countries having 100,000 and over, pre-war and years 1921-1926*—Continued

[Thousands—i. e., 000 omitted]

Country	Month of estimate	Average pre-war	1921	1922	1923	1924	1925	1926
ASIA								
Cyprus [20]	March	279	266	281	255	240	244	
Turkey European and Asiatic		19,713			11,914	10,357	11,439	12,872
Palestine	February-March		*232*	262	271	298	291	
Persia							[17 18] 4,000	
Syria				1,946	2,003	1,740	1,182	
India:								
British	December-April	23,164	22,075	22,082	22,338	22,340	22,882	
Native States	do	[18] 8,038	12,491	11,821	11,199	12,262		
Russia [18]		37,678	[21] 17,358	[21] 13,371	[21] 17,296	22,656	[22] 23,445	
China (including Turkestan, Inner Mongolia, and Manchuria)		25,951						
Philippine Islands	December [8]	96	196	223	258	302	319	
Dutch East Indies:								
Java and Madura			842	988				
Outer possessions			113	117				
Total Asia, comparable pre-war to 1925		61,217	39,895	35,957	40,147	45,538	46,890	
Estimated total [4]		137,410	Estimated average, 1921-1925,[1] 113,190					
OCEANIA								
Australia	December [8]	89,008	77,898	82,226	78,803	80,110	[23] 93,155	[23] 97,000
New Zealand	April	23,996	23,285	22,222	23,081	23,776	24,548	24,905
Total Oceania, comparable all periods		113,004	101,183	104,448	101,884	103,886	117,703	121,905
Estimated total [4]		113,020	101,198	104,462	101,900	103,900	117,717	
Grand total, comparable all periods		228,220	190,190	194,195	194,205	198,762	214,876	220,573
Estimated world total [4]		651,160	Estimated average, 1921-1925, 586,700					

Division of Statistical and Historical Research. Census returns are in italics; other returns are in roman.

[1] Average for 5-year period, if available. Otherwise for any year or years within this period except as otherwise stated. In countries having changed boundaries the pre-war figures are estimates for one year only of numbers within present boundaries. For the pre-war average the years immediately preceding the war have been used.

[4] These totals include countries with less than 100,000, interpolations for a few countries not reporting each year, and rough estimates for some others.

[8] Countries reporting as of December have been considered as of Jan. 1 of following year; i. e., figure for number of sheep in France as of Dec. 31, 1920, have been put in 1921 column.

[17] Unofficial.

[18] Goats included.

[20] Sheep 1 year old and over. It is stated that 30 per cent may be added for those under that age.

[21] Includes 6,408,000 sheep and goats estimated to be in Turkestan and Azerbaijan (part of Transcaucasia) according to census of 1920. Excluding Turkestan and Azerbaijan, the numbers in Asiatic Russia for these years are as follows: 1921, 10,950,000; 1922, 6,963,000.

[22] Includes 8,887,400 sheep and goats in Turkestan and Transcaucasia in 1924.

[23] Estimates according to revised method of estimating in Australia. The revised estimate for Jan. 1, 1925, is 5 per cent greater than the figure obtained by the old method.

Table 432.—*Sheep: Receipts at principal markets and at all markets, 1909–1926*

[Thousands—i. e., 000 omitted]

Year	Chicago	Denver	East St. Louis	Fort Worth	Kansas City	Omaha	South St. Joseph	South St. Paul	Sioux City	Total nine markets	All other markets reporting[1]	Total all markets reporting[1]
1909	4, 441	634	776	188	1, 645	2, 167	621	496	78	11, 046	(1)	(1)
1910	5, 229	596	736	163	1, 841	2, 985	560	865	151	13, 126	(1)	(1)
1911	5, 736	617	992	187	2, 175	2, 978	718	712	212	14, 327	(1)	(1)
1912	6, 056	777	1, 031	284	2, 134	2, 951	729	628	207	14, 797	(1)	(1)
1913	5, 903	620	950	328	2, 095	3, 222	812	785	271	14, 986	(1)	(1)
1914	5, 378	692	749	408	2, 002	3, 114	830	795	404	14, 372	(1)	(1)
1915	3, 510	765	648	363	1, 815	3, 268	878	704	337	12, 288	6, 147	18, 435
1916	4, 291	1, 409	671	431	1, 758	3, 171	804	623	321	13, 479	7, 213	20, 692
1917	3, 595	2, 060	531	406	1, 499	3, 017	679	430	267	12, 484	7, 732	20, 216
1918	4, 630	1, 652	536	335	1, 667	3, 386	827	630	387	14, 050	8, 435	22, 485
1919	5, 244	2, 087	724	453	1, 945	3, 789	1, 007	912	686	16, [illegible]47	10, 409	27, 256
1920	4, 005	2, 079	605	394	1, 687	2, 891	843	729	358	1[illegible], 591	9, 947	23, 538
1921	4, 734	1, 468	636	357	1, 780	2, 753	931	633	288	13, 580	10, 588	24, 168
1922	3, 874	1, 867	628	325	1, 574	2, 533	730	499	223	12, 253	10, 111	22, 364
1923	4, 098	1, 857	561	386	1, 671	2, 970	979	454	216	13, 192	8, 833	22, 025
1924	4, 192	2, 040	489	373	1, 569	2, 844	1, 089	476	310	13, 382	8, 819	22, 201
1925	3, 969	2, 357	559	314	1, 500	2, 420	1, 143	545	360	13, 167	8, 933	22, 100
1926	4, 405	1, 826	636	445	1, 762	2, 780	1, 303	773	449	14, 379	9, 489	23, 868

Division of Statistical and Historical Research. Prior to 1915 receipts compiled from yearbooks of stockyard companies; subsequent figures compiled from data of the reporting service of the Division of Livestock Meats, and Wool. Receipts, 1900–1908, are available in 1924 Yearbook, p. 935, Table 542.

[1] Figures prior to 1915 not obtainable.

Table 433.—*Sheep: Receipts at all public stockyards, 1915–1926*

[Thousands—i. e., 000 omitted]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.		Total.
1915[1]	1, 517	1, 257	1, 248	1, 019	1, 050	1, 080	1, 264	1, 725	2, 501	2, 359	2, 042	1, 373	18, 435
1916[1]	1, 450	1, 280	1, 156	1, 144	1, 347	1, 394	1, 451	1, 984	2, 650	3, 231	2, 126	1, 479	20, 692
1917	1, 578	1, 384	1, 256	1, 152	1, 059	1, 240	1, 353	1, 763	2, 554	3, 195	2, 099	1, 583	20, 216
1918	1, 354	1, 096	1, 270	1, 159	1, 214	1, 429	1, 639	2, 270	3, 496	3, 327	2, 605	1, 626	22, 485
1919	1, 594	1, 157	1, 268	1, 438	1, 408	1, 775	2, 287	3, 300	3, 854	3, 754	2, 845	2, 456	27, 256
1920	1, 614	1, 416	1, 315	1, 466	1, 488	1, 640	2, 034	2, 606	2, 895	3, 027	2, 471	1, 566	23, 538
1921	1, 792	1, 516	1, 750	1, 677	1, 916	1, 849	1, 776	2, 500	2, 618	3, 042	2, 068	1, 664	21, 168
1922	1, 835	1, 399	1, 465	1, 227	1, 692	1, 700	1, 677	1, 951	2, 303	3, 311	2, 288	1, 516	22, 364
1923	1, 636	1, 366	1, 430	1, 447	1, 794	1, 426	1, 661	1, 800	2, 650	3, 464	1, 816	1, 526	22, 025
1924	1, 697	1, 412	1, 367	1, 348	1, 344	1, 550	1, 672	2, 005	3, 027	3, 295	1, 879	1, 605	22, 201
1925	1, 467	1, 388	1, 504	1, 541	1, 689	1, 603	1, 699	2, 064	2, 627	3, 198	1, 712	1, 608	22, 100
1926	1, 548	1, 486	1, 694	1, 502	1, 717	1, 913	1, 739	2, 277	3, 279	3, 090	1, 917	1, 706	23, 868

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

[1] Complete information for 1915 and 1916, particularly on disposition of stock, is not obtainable from many markets.

TABLE 434.—*Sheep: Receipts, local slaughter and stocker and feeder shipments at public stockyards, 1923–1926*

[In thousands—i. e., 000 omitted]

Market	Receipts				Local slaughter				Stocker and feeder shipments			
	1923	1924	1925	1926	1923	1924	1925	1926	1923	1924	1925	1926
Amarillo, Tex	101	159	148	95	0	0	0	0	62	127	96	42
Atlanta, Ga	5	3	6	2	3	2	1	1	1	0	0	0
Augusta, Ga	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	0	(1)	0	0
Baltimore, Md	284	288	307	292	131	126	104	105	1	1	(1)	2
Boston, Mass	4	2	3	3	0	0	0	0	0	0	0	0
Buffalo, N. Y	1,226	1,166	1,059	1,111	161	138	129	133	2	9	9	15
Chattanooga, Tenn	2	1	2	1	2	1	2	1	0	0	0	(1)
Cheyenne, Wyo	169	157	105	110	0	0	0	0	0	0	0	0
Chicago, Ill	4,098	4,192	3,969	4,405	2,684	2,812	2,860	2,962	682	707	597	791
Cincinnati, Ohio	345	327	370	329	62	60	53	57	15	11	18	22
Cleveland, Ohio	333	365	416	393	186	181	188	191	4	3	0	0
Dallas, Tex	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	0	0	0	0
Dayton, Ohio	7	8	8	8	5	6	5	5	0	0	0	0
Denver, Colo	1,857	2,040	2,357	1,826	169	168	167	192	1,068	1,130	1,115	787
Detroit, Mich	298	393	367	393	194	212	200	233	12	10	10	14
East St. Louis, Ill	561	489	559	636	354	311	338	371	51	46	12	6
El Paso, Tex	73	41	124	83	8	9	6	10	37	15	78	28
Evansville, Ind	8	6	7	10	2	2	1	2	(1)	(1)	(1)	1
Fort Wayne, Ind	5	18	20	22	1	2	1	2	(1)	1	3	3
Fort Worth, Tex	386	373	314	445	155	155	141	205	39	50	60	77
Fostoria, Ohio	12	15	14	12	(1)	(1)	(1)	(1)	1	1	(1)	0
Indianapolis, Ind	124	123	147	221	61	56	58	66	5	9	17	19
Jacksonville, Fla	(1)	(1)	(1)	3	(1)	(1)	(1)	(1)	0	0	0	2
Jersey City, N. J	1,276	1,230	1,213	1,269	1,276	1,230	1,213	1,269	0	0	0	0
Kansas City, Mo	1,671	1,569	1,500	1,762	1,101	1,046	1,046	1,202	407	268	319	359
Knoxville, Tenn	1	2	3	(1)	1	(1)	(1)	(1)	0	0	0	0
Lafayette, Ind	4	6	6	4	2	1	2	1	1	1	2	2
Lancaster, Pa	53	15	18	34	2	3	3	4	0	0	0	0
Laredo, Tex	1	3	3	3	1	3	3	2	(1)	1	(1)	(1)
Los Angeles, Calif	75	102	30	46	71	102	28	47	4	(1)	1	(1)
Louisville, Ky	265	213	229	231	24	18	22	26	34	18	26	61
Marion, Ohio	11	12	8	16	(1)	(1)	(1)	(1)	2	1	(1)	1
Memphis, Tenn	2	1	4	3	(1)	(1)	1	1	(1)	(1)	(1)	(1)
Milwaukee, Wis	40	37	45	51	29	33	34	40	0	0	0	2
Montgomery, Ala	3	2	3	11	(1)	1	(1)	(1)	(1)	(1)	(1)	2
Moultrie, Ga	(1)	(1)	(1)	0	0	0	0	0	0	0	0	0
Muncie, Ind	0	0	11	17	0	0	(1)	(1)	0	0	1	3
Nashville, Tenn	129	116	145	165	21	20	20	20	2	1	2	2
Newark, N. J	29	33	38	39	29	33	38	39	(1)	(1)	0	0
New Orleans, La	4	2	2	2	2	2	1	1	1	(1)	1	1
New York, N. Y	74	68	109	149	75	68	109	149	0	0	0	0
North Salt Lake, Utah	449	618	688	600	19	45	44	49	234	345	378	320
Ogden, Utah	849	565	884	1,034	7	9	4	5	360	344	306	371
Oklahoma City, Okla	9	9	10	14	4	6	6	7	3	2	2	2
Omaha, Nebr	2,970	2,844	2,420	2,780	1,682	1,602	1,522	1,643	889	823	593	910
Pasco, Wash	66	84	71	59	0	0	0	0	0	0	0	0
Peoria, Ill	4	3	6	17	1	1	1	1	3	2	4	13
Philadelphia, Pa	248	251	227	220	244	246	223	213	0	0	0	0
Pittsburgh, Pa	1,045	979	910	1,073	117	115	105	114	0	0	0	0
Portland, Oreg	179	199	179	182	104	96	94	97	5	8	6	6
Pueblo, Colo	704	875	713	810	0	0	0	0	212	347	299	232
Richmond, Va	9	9	8	10	8	7	6	6	1	2	1	2
South St. Joseph, Mo	979	1,089	1,143	1,303	754	805	866	1,010	150	229	203	231
South St. Paul, Minn	454	476	545	773	253	314	347	411	91	63	63	130
San Antonio, Tex	23	18	11	14	2	3	3	4	7	6	4	7
Seattle, Wash	86	100	78	88	83	99	75	86	0	0	0	0
Sioux City, Iowa	216	310	360	449	136	193	274	336	42	64	61	84
Sioux Falls, S. Dak	5	5	2	8	(1)	(1)	(1)	(1)	1	(1)	(1)	1
Spokane, Wash	28	48	37	57	8	13	10	9	12	12	16	22
Springfield, Ohio	9	14	16	26	(1)	1	(1)	1	0	0	0	5

[1] Not over 500.

TABLE 434.—*Sheep: Receipts, local slaughter and stocker and feeder shipments at public stockyards, 1923–1926*—Continued

[In thousands—i. e., 000 omitted]

Market	Receipts				Local slaughter				Stocker and feeder shipments			
	1923	1924	1925	1926	1923	1924	1925	1926	1923	1924	1925	1926
Toledo, Ohio	13	28	20	11	1	1	1	2	0	(1)	(1)	1
Washington, D. C.	17	16	14	13	17	15	14	13	0	0	0	0
Wichita, Kans.	120	84	89	125	17	27	30	43	37	22	29	44
Discontinued [2]	7	(1)	0	0	2	(1)	0	0	(1)	0	0	0
Total	22, 025	22, 201	22, 100	23, 868	10, 271	10, 399	10, 399	11, 387	4, 478	4, 679	4, 332	4, 623

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Early data in 1925 Yearbook, pp. 1153–1155.
Local slaughter represents number driven out from public stockyards for local sl[illegible]ghter

[1] Not over 500. [2] Includes only those markets which have been t[illegible]ally discontinued.

TABLE 435.—*Sheep: Receipts, local slaughter and stocker and feeder shipments at certain public stockyards, 1926*

[In thousands—i. e., 000 omitted]

Stockyard	Jan.	Feb.		Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.	Tot
Chicago, Ill.:													
Receipts	355	339	410	314	200	299	285	383	541	467	346	406	4, 4
Local slaughter	235	238		216	216	256	223	256	269	237	213	279	2, 9
Stocker and feeder shipments	30	30		9	8	33	46	100	217	170	67	64	791
Denver, Colo.:													
Receipts	102	135		158	62	79	46	61	263	464	191	66	1, 8
Local slaughter	14	20		21	14	7	6	12	21	26	15	12	192
Stocker and feeder shipments	41	22		6	8	23	19	9	84	338	180	48	787
East St. Louis, Ill.:													
Receipts	33	30		16	37	88	86	85	92	67	35	37	636
Local slaughter	19	16		8	27	68	62	58	24	26	23	24	371
Stocker and feeder shipments	(1)	0		(1)	(1)	1	1	1	1	1	1	0	7
Fort Worth, Tex.:													
Receipts	9	9		35	105	98	42	22	49	36	18	10	445
Local slaughter	7	7		22	49	42	13	10	9	14	14	8	205
Stocker and feeder shipments	1	1		3	7	10	16	5	18	11	3	1	77
Kansas City, Mo.:													
Receipts	105	112		129	155	152	114	152	283	226	93	94	1, 7
Local slaughter	86	90		101	102	100	86	104	160	119	69	76	1, 2
Stocker and feeder shipments	12	9		9	12	25	19	38	95	92	21	15	359
Omaha, Nebr.:													
Receipts	172	185		164	133	175	195	388	522	258	165	159	2, 7
Local slaughter	129	139		134	107	139	137	135	198	107	103	116	1, 6
Stocker and feeder shipments	20	15		5	9	29	54	205	329	152	47	30	910
Sioux City, Iowa:													
Receipts	50	39		19	13	13	14	24	52	83	52	58	449
Local slaughter	42	37		18	11	11	11	17	28	45	40	49	336
Stocker and feeder shipments	6	2		1	1	2	3	7	20	26	8	5	84
South St. Joseph, Mo.:													
Receipts	115	133		115	88	85	91	109	144	110	74	79	1, 3
Local slaughter	99	108		89	73	69	77	82	90	70	56	68	1, 01
Stocker and feeder shipments	12	11		17	13	15	14	22	49	33	16	12	231
South St. Paul, Minn.:													
Receipts	47	24		7	7	15	15	44	113	238	150	91	77
Local slaughter	30	16		7	7	7	12	30	76	83	75	57	41
Stocker and feeder shipments	1	1		1	(1)	1	3	8	17	65	25	7	130

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats and Wool.
Local slaughter represents number driven out from public stockyards for local slaughter.

[1] Not over 500.

TABLE 436.—*Feeding sheep: Inspected shipments from public stockyards, 1926*

Origin and destination	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Number	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*
Market origin:													
Chicago, Ill	33,268	28,468	20,842	9,005	7,203	31,875	45,385	82,425	216,800	170,538	70,497	67,838	784,144
Denver, Colo	28,305	19,987	6,389	4,220	6,719	18,932	4,124	8,325	99,626	348,724	169,050	49,420	763,821
East St. Louis, Ill	150	54	490	220	188	1,726	3,673	7,388	24,105	4,449	540	61	43,044
Fort Worth, Tex	1,229	1,201	2,687	4,967	7,840	14,159	16,801	5,500	16,976	11,725	2,368	1,325	86,778
Kansas City, Kans	5,942	5,568	5,098	2,279	5,420	22,517	19,273	28,990	79,898	80,297	18,071	8,494	281,847
Louisville, Ky				175	360	10,543	24,194	13,176	7,097	5,272	167		60,984
Omaha, Nebr	24,845	16,336	25,281	16,003	17,632	28,414	50,236	189,203	302,072	147,696	44,361	32,301	894,380
Sioux City, Iowa	5,936	2,335	3,402	1,217	1,031	1,984	2,405	5,857	16,829	23,677	8,672	5,552	78,897
South St. Joseph, Mo	2,456	852	108		950	2,257	5,304	11,449	27,602	16,393	6,922	8,852	78,145
South St. Paul, Minn	930	505	565	521	117	473	1,337	1,788	13,549	19,652	16,672	5,716	61,825
All other inspected	2,779	1,960	1,696	865	1,873	7,760	7,623	10,649	27,952	32,462	17,260	7,105	119,984
Total	105,840	77,266	66,558	39,472	49,333	140,640	180,355	364,750	832,506	860,885	354,580	181,664	3,253,849
State destination:													
Colorado	1,636	11,815	3,215	3,071	5,582	18,932	2,485	2,657	24,442	148,754	99,663	35,356	357,608
Illinois	8,423	6,041	4,025	1,890	2,250	11,175	17,379	64,717	115,935	47,995	18,552	21,595	319,977
Indiana	8,475	3,298	2,818	852	2,490	25,469	27,867	31,468	98,868	38,912	17,786	11,892	270,195
Iowa	10,703	5,585	6,100	1,951	2,589	12,090	32,598	117,937	168,825	91,078	18,380	8,562	476 398
Kansas	6,542	3,744	2,212	1,792	3,421	5,026	5,764	10,391	49,423	64,947	27,515	8,476	189,253
Kentucky			235	175	360	9,266	24,532	14,234	7,254	6,173	781	441	63,451
Michigan	15,812	17,823	14,541	5,643	1,546	11,691	16,089	20,328	83,748	94,115	33,727	26,527	341,590
Minnesota	150		46		117	165	197	5,155	6,448	11,952	11,497	8,843	36,570
Missouri	1,690	3,753	1,173	753	2,902	9,611	10,345	25,480	59,124	42,563	9,496	5,023	171,913
Nebraska	45,208	17,817	26,563	17,415	18,385	15,785	19,099	45,340	134,581	234,788	87,085	43,162	705,228
Ohio	323	1,364	116	750	30	2,330	1,909	9,239	35,119	27,378	4,343	1,925	84,826
South Dakota		262	368	2	12	119	30	1,144	8,045	9,414	2,003	610	22,009
Texas	1,162	1,061	2,287	3,646	6,126	10,344	14,032	2,656	9,851	5,776	2,483	1,028	60,452
Wisconsin	489	504	519	390	1,249	2,533	2,432	5,724	17,800	13,366	1,646	3,768	50,420
All other	5,227	4,199	2,340	1,142	2,274	6,104	5,597	8,280	13,043	23,674	19,623	9,456	100,959
Total	105,840	77,266	66,558	39,472	49,333	140,640	180,355	364,750	832,506	860,885	354,580	181,664	3,253,849

Division of Statistical and Historical Research. Compiled from Bureau of Animal Industry inspection records.

TABLE 437.—*Farm prices of sheep, per head, by ages, United States, January 1, 1912–1927*

Jan. 1—	Under 1 year old	Ewes 1 year and over	Wethers 1 year and over	Rams	Jan. 1—	Under 1 year old	Ewes 1 year and over	Wethers 1 year and over	Rams
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*		*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1912	2.64	3.45	3.43	8.26	1920	8.07	11.04	9.64	21.94
1913	3.11	3.98	3.93	8.80	1921	5.33	6.38	5.94	15.13
1914	3.22	4.09	4.06	8.49	1922	4.25	4.83	4.05	11.31
1915	3.62	4.59	4.48	9.01	1923	6.80	7.67	5.90	14.30
1916	4.13	5.35	5.02	10.32	1924	6.97	8.10	5.98	15.55
1917	5.63	7.48	6.78	13.62	1925	8.52	10.02	7.13	16.91
1918	9.06	12.70	11.26	20.84	1926	9.03	11.01	7.32	18.46
1919	8.82	12.44	11.02	21.90	1927	7.91	10.29	6.61	18.75

Division of Crop and Livestock Estimates.

TABLE 438. *Sheep: Estimated price per 100 pounds received by producers, United States, 1910–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Weighted av.
Average:	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1910–1913	4.58	4.52	4.80	5.10	4.99	4.76	4.52	4.31	4.26	4.18	4.15	4.23	4.55
1914–1920	7.43	7.79	8.26	8.69	8.69	8.22	7.75	7.60	7.55	7.41	7.30	7.30	7.84
1921–1925	6.26	6.56	6.85	6.92	6.71	6.28	6.13	6.04	5.99	5.97	5.99	6.28	6.35
1910	5.63	5.09	5.64	6.10	5.79	5.44	5.47	4.68	4.81	4.68	4.63	4.54	5.24
1911	4.47	4.34	4.45	4.55	4.51	4.24	4.19	3.98	3.91	3.68	3.65	3.71	4.16
1912	3.89	4.01	4.12	4.57	4.74	4.52	4.21	4.26	4.11	4.19	4.05	4.21	4.24
1913	4.35	4.63	4.97	5.16	4.91	4.84	4.20	4.32	4.23	4.16	4.27	4.46	4.55
1914	4.67	4.67	4.77	4.96	4.87	4.70	4.75	4.87	4.80	4.81	4.68	4.95	4.79
1915	4.95	5.14	5.36	5.60	5.54	5.43	5.35	5.16	5.06	5.18	5.18	5.38	5.27
1916	5.52	5.90	6.35	6.61	6.66	6.54	6.33	6.22	6.25	6.20	6.41	6.77	6.29
1917	7.33	8.17	9.21	9.69	10.15	9.84	9.32	9.33	10.05	10.24	10.20	10.44	9.45
1918	10.55	10.75	11.41	11.98	12.32	11.56	11.04	10.99	10.79	10.35	10.11	9.46	10.95
1919	9.68	9.95	10.45	11.33	10.93	10.34	9.25	9.06	8.69	8.46	8.35	8.53	9.63
1920	9.34	9.97	10.25	10.66	10.34	9.13	8.21	7.54	7.24	6.62	6.20	5.54	8.51
1921	5.30	5.01	5.27	5.11	5.11	4.74	4.34	4.38	4.11	3.96	3.84	4.10	4.65
1922	4.57	5.71	6.51	6.43	6.65	6.09	6.11	5.98	5.70	5.93	6.02	6.27	5.96
1923	6.88	6.83	7.06	7.20	6.92	6.43	6.43	6.22	6.57	6.33	6.20	6.39	6.65
1924	6.71	6.82	7.22	7.45	7.33	7.09	6.50	6.32	6.30	6.32	6.39	6.84	6.81
1925	7.86	8.41	8.20	8.42	7.53	7.04	7.17	7.32	7.27	7.31	7.51	7.79	7.70
1926	7.95	8.20	7.66	7.67	7.78	7.56	7.09	6.92	7.13	6.93	6.75	6.95	7.43

Division of Crop and Livestock Estimates.

TABLE 439.—*Lambs: Estimated price per 100 pounds received by producers, United States, 1910–1926*

Year beginning June	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Weighted av.
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1910–1913	6.26	5.98	5.51	5.47	5.35	5.31	5.52	5.78	5.78	5.94	6.20	6.26	5.76
1914–1920	10.92	10.31	10.16	10.08	9.89	9.78	9.80	10.18	10.53	10.83	11.44	11.44	10.44
1921–1925	10.20	9.95	9.66	9.62	9.72	9.84	10.16	10.74	11.08	11.50	11.22	11.32	10.42
1910	7.13	6.71	5.70	5.85	5.78	5.54	5.60	5.71	5.44	5.49	5.77	5.74	5.79
1911	5.51	5.42	5.25	5.02	4.68	4.68	4.93	5.22	5.15	5.38	5.98	6.16	5.28
1912	6.02	5.74	5.60	5.49	5.42	5.37	5.70	6.03	6.34	6.56	6.59	6.66	5.96
1913	6.36	6.05	5.50	5.51	5.51	5.64	5.85	6.16	6.18	6.31	6.47	6.49	6.03
1914	6.47	6.55	6.26	6.27	6.09	6.14	6.33	6.47	6.67	6.06	7.35	7.32	6.49
1915	7.26	7.21	6.70	6.71	6.70	6.76	7.02	7.29	7.78	8.10	8.58	8.49	7.38
1916	8.36	8.16	8.15	8.22	8.02	8.41	8.72	9.59	10.51	11.46	12.03	12.51	9.50
1917	12.64	11.19	12.08	13.06	14.09	13.79	13.81	13.83	13.77	14.11	15.34	15.39	13.60
1918	14.98	14.20	14.20	13.73	13.20	12.54	12.44	12.71	13.17	14.03	14.61	14.34	13.65
1919	13.89	13.09	12.91	12.25	11.47	11.45	11.85	12.91	14.08	14.17	14.63	14.26	13.05
1920	12.82	11.79	10.84	10.31	9.65	9.37	8.46	8.44	7.76	7.90	7.55	7.78	9.41
1921	7.59	7.37	6.99	6.27	5.98	6.12	6.60	7.33	8.87	10.21	10.54	10.39	7.83
1922	9.87	9.55	9.39	9.43	10.06	10.30	10.49	10.69	10.83	11.01	10.69	11.00	10.30
1923	10.72	10.60	9.96	10.28	10.17	10.01	10.10	10.19	10.53	11.22	11.32	11.43	10.54
1924	11.21	10.50	10.15	10.18	10.35	10.55	10.96	12.69	13.13	13.48	12.22	11.99	11.45
1925	11.62	11.71	11.80	11.95	12.04	12.20	12.67	12.79	12.02	11.56	11.32	11.78	11.98
1926	12.07	11.52	11.12	11.32	11.31	11.11	10.92	------	------	------	------	------	-------

Division of Crop and Livestock Estimates.

Table 440.—*Sheep: Estimated price per 100 pounds received by producers, by States, 1926*

State	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Maine	7.10	8.00	7.20	6.70	6.40	6.20	5.50	5.40	6.00	5.10	5.40	6.00	6.25
New Hampshire		5.50			6.60	6.50	8.00	6.20	7.00	6.90	6.30	6.20	6.58
Vermont		5.20			5.20	5.70	5.10	5.10	5.40	5.10	4.80	4.90	5.17
Massachusetts		6.00				6.50	6.00	6.00			5.50		6.00
Rhode Island		7.00			7.00	7.00	7.00	8.50	7.00	6.50	7.00	6.00	7.00
Connecticut		10.00			9.70		8.50	10.50	8.00	7.00	8.00	7.60	8.66
New York	5.90	6.50	5.80	6.00	6.40	5.70	5.80	5.70	5.90	5.60	5.40	5.60	5.86
New Jersey	6.50	7.00	6.00	7.00	6.00		6.00	6.00		5.00	5.00		6.06
Pennsylvania	7.70	7.60	7.70	7.00	7.50	7.50	6.70	6.60	6.30	7.00	6.20	6.00	6.98
Ohio	7.00	7.00	6.30	6.70	6.70	6.10	5.80	5.80	5.90	5.70	5.90	5.70	6.26
Indiana	6.20	6.00	5.80	5.90	5.80	5.70	5.40	5.20	5.30	5.10	5.30	5.20	5.58
Illinois	6.80	7.40	7.00	6.40	7.00	6.80	6.30	5.50	6.10	5.70	5.40	6.00	6.37
Michigan	6.60	7.30	6.70	6.60	6.90	7.00	6.10	6.10	6.30	5.70	5.60	6.20	6.42
Wisconsin	6.70	7.00	6.80	6.20	7.00	6.80	5.60	5.30	6.50	5.50	5.60	5.30	6.19
Minnesota	7.20	7.40	7.30	7.70	8.00	7.00	6.70	6.30	7.00	6.30	5.90	6.00	6.90
Iowa	7.80	7.20	7.60	7.80	7.90	7.80	6.20	7.20	6.80	6.20	6.00	6.50	7.08
Missouri	7.50	7.40	7.00	6.70	7.00	6.90	6.50	6.00	6.40	6.40	6.50	6.30	6.72
North Dakota	7.80	7.80	7.50	7.30	8.10	7.00	6.90	7.10	7.70	6.90	6.10	6.40	7.22
South Dakota	8.50	7.70	8.00	7.60	7.90	6.70	6.40	6.10	7.00	6.00	6.40	5.80	7.01
Nebraska	7.60	8.50	8.50	9.60	8.30	7.90	7.50	6.30	7.20	6.80	6.70	7.00	7.66
Kansas	7.40	8.50	8.50	7.40	7.60	8.00	7.60	7.60	6.40	6.50	6.60	6.40	7.38
Delaware	6.50	7.50		5.00	5.00	5.00		4.50		5.80	6.00	7.00	5.81
Maryland	5.60	6.50	6.10	5.50	6.00	6.20	5.40	5.80	4.90	5.60	5.80	5.10	5.71
Virginia	6.40	6.50	7.10	6.60	6.60	6.10	5.80	5.50	6.00	5.80	5.90	5.70	6.17
West Virginia	8.00	7.50	8.00	8.20	7.10	6.50	6.20	6.10	6.30	6.90	7.40	7.00	7.10
North Carolina	6.20		6.90	8.00	7.60	8.00	7.60	7.70	7.20	7.50	8.00	8.00	7.52
South Carolina					7.10	6.70	7.00	6.80	7.10	6.40	6.50	7.00	6.82
Georgia	6.50				6.00	5.80	6.50	5.70	5.70	5.90	6.00	6.40	6.06
Florida					7.50		5.60	5.00	6.60	5.70	6.50	6.00	6.13
Kentucky	6.00	7.00	6.90	7.10	6.80	6.30	5.70	5.80	5.90	6.80	6.30	6.80	6.45
Tennessee	6.30	6.40	6.60	7.20	7.10	6.70	5.60	6.00	6.70	6.70	6.40	6.10	6.48
Alabama	4.80	5.70	5.40	6.00	7.00	6.60	5.40	6.20	6.10	7.00	6.00	7.00	6.10
Mississippi	5.00	5.20	4.90	5.10	5.20	5.00	4.70	4.50	5.20	4.70	4.70	5.20	4.95
Arkansas	5.10	5.80			5.80	5.00	5.30	4.70	4.80	5.10	5.10	6.50	5.32
Louisiana	7.70		6.70	4.50	4.60		4.10	5.50	7.50	5.50	6.80	5.80	5.87
Oklahoma				7.00	6.50	7.00	6.50	6.30	7.50	6.50	7.20	6.00	6.72
Texas	6.60	6.90	7.50	7.20	6.80	6.90	6.50	7.40	7.20	7.80	6.70	7.00	7.04
Montana	8.50	8.70	8.40	8.00	8.10	8.30	8.70	8.50	8.80	7.50	7.20	7.90	8.22
Idaho	7.40	7.60	7.40	7.20	8.10	8.40	8.00	6.90	6.30	6.80	6.20	6.60	7.24
Wyoming	9.00	8.60	8.50	9.00	9.80	9.00	8.10	6.80	7.80	6.60	7.80	8.70	8.31
Colorado	9.30	9.20	8.80	8.50	8.40	8.90	6.90	6.50	7.60	6.10	6.80	8.00	7.92
New Mexico		8.70	8.50	9.10	8.50	8.00	8.50	9.00	7.50	8.40	7.80	7.00	8.27
Arizona	8.30	8.60	7.50	6.30	6.80	6.80	6.00	5.60	6.00	6.50	5.70	7.00	6.76
Utah	8.90	9.20	9.00	7.80	8.60	8.00	7.70	7.70	8.00	7.90	7.70	7.50	8.17
Nevada		12.00		7.00	7.50	7.00	7.50		8.00	8.70			8.24
Washington	7.80	8.20	7.90	8.60	8.20	7.40	7.00	6.50	7.00	6.50	6.80	6.50	7.37
Oregon	9.50	10.00	9.00	8.90	7.60	8.30	7.00	7.00	8.00	7.10	7.40	7.10	8.08
California	9.40	9.10	8.90	8.10	8.70	8.00	7.50	7.40	7.50	7.50	7.20	7.30	8.05
United States	7.95	8.20	7.66	7.67	7.78	7.56	7.09	6.92	7.13	6.93	6.75	6.95	7.38

Division of Crop and Livestock Estimates.

TABLE 441.—*Lambs: Estimated price per 100 pounds received by producers, by States, 1926*

State	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Maine	11.70	12.50	11.60	12.50	11.90	12.50	11.50	12.20	11.80	11.50	10.00	11.00	11.72
New Hampshire	11.50	12.00	11.30	11.50	12.00	12.50	13.00	11.60	12.60	11.30	11.20	11.00	11.79
Vermont	11.50	11.80	11.70	11.00	11.00	11.80	12.50	11.90	11.30	11.30	11.10	11.00	11.49
Massachusetts	12.50	12.20	11.00	11.50	------	12.20	10.60	11.00	12.00	------	11.50	------	11.61
Rhode Island	12.50	14.00	14.00	14.00	13.50	15.00	14.50	14.50	13.00	13.00	12.80	12.00	13.57
Connecticut	13.50	10.00	------	14.00	15.00	15.00	14.00	14.50	13.50	------	13.00	13.00	13.55
New York	12.80	12.80	12.30	12.00	12.30	13.40	12.30	11.70	11.70	12.10	11.90	11.80	12.26
New Jersey	------	12.60	------	14.00	14.00	14.00	14.00	15.00	------	12.00	12.00	14.00	13.51
Pennsylvania	12.30	12.60	12.20	11.70	12.70	13.30	12.40	11.30	12.00	11.80	11.70	11.70	12.14
Ohio	13.00	12.40	12.00	11.30	12.40	12.80	12.00	11.70	12.00	11.90	11.70	11.30	12.04
Indiana	13.00	12.50	11.90	11.70	12.30	13.70	12.40	11.70	12.00	11.80	11.50	10.80	12.11
Illinois	13.30	12.50	11.70	11.00	12.70	13.90	12.40	11.80	12.20	11.70	11.50	11.40	12.18
Michigan	13.50	13.00	12.10	12.10	12.70	13.20	13.00	11.90	12.10	12.10	11.80	11.50	12.42
Wisconsin	13.00	12.00	12.30	11.80	12.20	13.20	12.40	11.50	12.00	11.70	11.70	11.30	12.09
Minnesota	13.20	12.30	11.80	11.90	12.60	12.40	12.60	11.70	11.70	12.00	11.50	11.30	12.08
Iowa	13.20	12.40	11.90	11.60	12.60	13.50	12.30	12.30	12.10	11.70	11.70	11.10	12.20
Missouri	12.80	12.00	11.30	11.40	13.00	13.40	11.90	11.20	11.40	11.40	11.20	10.80	11.82
North Dakota	12.60	12.00	11.40	11.40	11.50	12.50	11.60	11.50	11.50	11.10	11.40	10.10	11.55
South Dakota	13.10	12.80	11.90	11.80	12.20	13.40	11.60	11.50	11.50	11.70	11.80	11.00	12.02
Nebraska	14.00	12.90	12.30	12.10	12.50	13.80	11.90	11.00	12.00	11.70	12.00	11.30	12.29
Kansas	12.80	12.40	12.00	11.90	12.70	13.80	12.40	11.90	11.70	11.90	11.70	11.20	12.20
Delaware	12.00	13.00	------	14.00	14.00	15.00	12.00	------	13.30	12.50	12.60	11.00	12.94
Maryland	13.20	13.90	13.60	13.40	14.70	14.70	13.00	12.70	12.40	12.60	12.30	12.30	13.23
Virginia	11.80	12.60	12.40	13.30	13.60	13.20	12.10	11.80	11.60	11.70	11.70	11.80	12.30
West Virginia	12.00	12.00	11.80	11.90	11.70	12.20	11.70	11.30	11.00	11.30	11.40	11.10	11.62
North Carolina	10.00	11.20	11.10	11.60	10.50	12.00	11.60	11.00	11.00	10.50	11.00	11.50	11.07
South Carolina	------	------	11.40	12.00	10.60	9.40	9.00	9.50	8.00	10.00	9.50	9.00	9.84
Georgia	9.20	11.00	------	10.20	8.60	9.70	9.60	8.40	9.00	10.00	8.80	9.50	9.45
Florida	------	------	------	------	12.50	------	10.00	------	8.60	8.50	9.60	10.00	6.87
Kentucky	11.30	12.20	11.70	11.40	13.00	14.50	12.60	12.00	11.70	11.70	11.20	11.10	12.03
Tennessee	11.00	10.40	10.80	11.30	12.50	13.40	11.90	11.20	10.70	10.80	10.30	9.60	11.16
Alabama	7.20	7.30	8.50	7.30	9.10	9.60	9.30	10.10	10.30	9.00	12.20	10.20	9.13
Mississippi	------	6.50	7.60	7.00	7.60	7.50	9.00	8.00	8.90	7.50	7.80	8.00	7.74
Arkansas	7.00	8.90	7.40	10.20	8.00	8.00	9.20	8.30	8.00	7.80	8.70	8.10	8.30
Louisiana	------	6.50	7.00	7.40	5.40	------	7.30	7.60	8.50	7.60	8.50	8.00	7.38
Oklahoma	------	11.50	11.60	11.20	11.20	13.00	11.70	10.00	10.50	10.70	9.70	9.50	10.96
Texas	9.30	9.50	10.00	10.00	10.80	10.10	9.50	9.40	10.00	10.40	9.60	9.10	9.81
Montana	11.20	11.90	11.90	11.30	12.00	11.30	11.30	10.70	11.20	10.90	10.50	10.80	11.25
Idaho	11.70	11.40	10.60	10.80	11.00	12.30	11.30	11.10	11.30	11.00	10.20	10.90	11.13
Wyoming	12.40	12.60	11.50	11.00	11.00	12.00	11.40	10.50	10.30	11.00	11.30	11.30	11.36
Colorado	14.30	12.60	12.00	11.30	12.00	12.90	12.60	11.50	12.00	12.00	11.80	11.70	12.22
New Mexico	14.00	12.00	11.50	11.60	11.00	10.50	10.60	10.00	10.30	10.70	10.20	10.80	11.10
Arizona	13.20	12.60	11.80	12.20	11.60	12.10	11.00	12.10	11.50	10.80	10.70	11.00	11.72
Utah	12.10	11.50	11.40	10.30	11.40	10.90	10.70	11.10	11.20	11.90	11.80	10.50	11.23
Nevada	------	------	10.00	12.00	12.50	11.20	10.30	12.00	11.10	10.70	11.50	10.00	11.13
Washington	11.40	11.30	10.50	11.40	11.00	11.40	11.10	10.60	10.60	10.30	10.60	10.40	10.88
Oregon	13.00	12.00	11.90	11.60	11.60	10.90	10.80	10.90	11.40	10.20	10.20	10.60	11.26
California	13.00	12.80	12.40	12.00	11.60	11.50	12.00	11.80	11.50	11.80	11.40	11.50	11.99
United States	12.79	12.02	11.56	11.32	11.78	12.07	11.52	11.12	11.32	11.31	11.11	10.92	11.57

Division of Crop and Livestock Estimates.

TABLE 442.—*Sheep and lambs, native and western: Average price per 100 pounds Chicago, by months, 1909-1926*

SHEEP

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1909-1913	4.84	5.12	5.86	5.95	5.81	4.75	4.32	4.12	4.28	4.10	4.06	4.35	4.79
1914-1920	8.98	9.74	10.63	11.23	10.49	8.45	8.44	8.50	8.14	7.93	7.81	7.97	9.03
1921-1925	7.71	8.01	8.73	8.57	7.30	5.42	5.90	6.05	6.05	6.31	6.71	7.52	7.02
1909	4.90	4.92	5.28	5.60	6.05	5.28	4.68	4.50	4.65	4.35	4.52	4.92	4.97
1910	5.55	6.50	7.60	7.60	6.55	5.10	4.20	4.20	4.25	3.95	3.70	3.90	5.26
1911	4.10	4.15	4.70	4.20	4.45	3.80	3.95	3.50	3.80	3.65	3.45	3.55	3.91
1912	4.30	4.15	5.30	5.90	6.15	4.50	4.25	4.05	4.15	4.00	4.05	4.45	4.60
1913	5.35	5.90	6.40	6.45	5.85	5.05	4.50	4.35	4.30	4.55	4.60	4.95	5.19
1914	5.50	5.70	5.95	6.25	5.65	5.10	5.40	5.55	5.30	5.30	5.65	5.40	5.56
1915	5.80	6.45	7.45	7.70	7.35	5.50	6.05	6.25	5.75	6.00	5.85	6.20	6.36
1916	7.20	7.75	8.25	8.15	8.20	7.35	7.25	7.35	7.80	7.50	8.00	9.00	7.82
1917	10.00	11.25	11.70	12.10	13.00	10.00	9.10	9.75	11.15	11.65	11.25	11.50	11.04
1918	12.20	12.35	13.60	15.65	14.75	13.40	12.65	13.15	11.80	10.45	9.85	9.40	12.44
1919	10.35	11.35	14.05	11.50	12.25	9.30	9.70	9.75	8.30	8.15	8.30	9.00	10.47
1920	11.80	13.35	13.40	14.25	12.25	8.50	8.90	7.70	6.85	6.45	5.75	4.70	9.49
1921	5.07	4.90	6.14	6.58	6.33	4.46	5.08	4.58	4.49	4.71	4.40	4.92	5.13
1922	7.26	8.28	9.17	9.33	7.35	5.59	6.12	5.63	6.05	6.25	7.48	7.28	7.15
1923	7.72	8.08	8.64	8.90	6.74	5.00	5.16	7.09	7.29	6.35	6.89	7.37	7.10
1924	8.16	9.12	10.50	10.21	8.11	5.82	5.66	6.18	5.46	6.60	6.62	8.45	7.57
1925	10.33	9.09	9.22	7.84	7.96	6.25	7.48	6.83	6.95	7.64	8.16	9.57	8.16
1926	9.72	9.18	8.82	8.87	7.97	5.85	5.97	6.50	6.25	6.12	5.88	5.86	7.25

LAMBS

Average:													
1909-1913	7.38	7.37	7.81	7.76	7.64	7.01	7.18	6.98	6.69	6.54	6.66	6.94	7.16
1914-1920	13.34	13.64	13.99	14.04	13.93	12.44	13.51	12.96	12.86	12.37	12.40	12.63	13.18
1921-1925	13.98	14.19	14.44	13.86	13.29	13.58	13.25	12.66	12.90	12.85	13.13	14.27	13.53
1909	7.35	7.50	7.65	7.85	8.25	7.60	7.70	7.35	6.80	6.50	7.10	7.50	7.43
1910	8.30	8.65	9.40	9.10	8.40	7.60	7.10	6.70	6.80	6.65	6.25	6.10	7.59
1911	6.20	6.05	6.10	5.50	5.85	6.10	6.30	6.35	5.70	5.75	5.54	5.75	5.93
1912	6.50	6.15	7.30	7.95	8.30	6.90	7.25	7.10	7.00	6.75	7.15	7.75	7.18
1913	8.55	8.50	8.60	8.40	7.40	6.85	7.55	7.40	7.15	7.05	7.25	7.60	7.69
1914	7.90	7.60	7.65	7.60	8.10	7.95	8.45	8.15	7.80	7.60	8.75	8.30	7.99
1915	8.40	8.75	9.55	9.65	10.10	9.20	8.75	8.90	8.75	8.75	8.80	9.00	9.05
1916	10.30	10.90	11.10	10.45	10.75	9.55	10.55	10.75	10.60	10.15	11.40	12.70	10.77
1917	13.85	14.30	14.25	14.40	16.90	15.25	15.65	15.50	17.50	17.40	16.75	16.45	15.68
1918	17.20	16.60	17.55	19.20	18.00	16.85	18.50	17.50	17.25	15.35	15.10	14.60	16.98
1919	16.25	17.40	19.05	18.15	16.25	14.05	17.10	16.75	14.85	15.00	14.50	16.40	16.31
1920	19.50	19.95	18.80	18.80	17.40	14.25	15.55	13.20	13.30	12.35	11.53	10.96	15.47
1921	10.72	9.07	9.91	9.69	11.07	10.67	10.09	9.46	8.86	8.66	9.25	10.86	9.86
1922	12.67	14.49	15.39	14.10	12.95	12.42	13.04	12.51	13.53	13.94	14.17	14.93	13.68
1923	14.69	14.85	14.56	14.42	14.12	14.81	14.22	12.89	13.52	12.93	12.75	12.96	13.89
1924	13.53	14.95	16.06	16.22	15.23	14.12	13.79	13.57	13.38	13.52	14.03	16.47	14.57
1925	18.28	17.59	16.28	14.85	13.06	15.86	15.11	14.88	15.19	15.20	15.44	16.15	15.66
1926	15.28	13.78	13.48	14.38	15.30	16.66	14.31	14.20	14.05	13.88	13.25	12.57	14.26

Division of Statistical and Historical Research. Figures prior to 1921 for sheep, and prior to November 1920, for lambs, compiled from Chicago Drovers Journal Yearbook; subsequent figures from data of the reporting service of the Division of Livestock, Meats, and Wool. Prices for sheep, 1905-1908 and for lambs, 1901-1908, are available in 1924 Yearbook, p. 945, Table 553.

Table 443.—*Sheep: Average price per 100 pounds at six markets, by months, 1926*

CHICAGO

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Slaughter sheep and lambs:													
Lambs—													
Light and handy weight (under 84 pounds), medium to choice	*Dols.* 14.80	*Dols.* 13.52	*Dols.* 13.32	*Dols.* 13.87	*Dols.* 14.51	*Dols.* 15.83	*Dols.* 13.72	*Dols.* 13.56	*Dols.* 13.44	*Dols.* 13.37	*Dols.* 13.04	*Dols.* 12.12	*Dols.* [illegible]
Heavyweight (92 pounds up), medium to choice	----	11.90	12.13	12.99	13.56	----	----	----	----	----	----	11.17	----
All weights, cull and common	12.88	12.11	11.39	12.09	12.23	12.81	11.12	10.34	10.57	10.56	10.20	9.30	[illegible]
Spring lambs—													
Medium to choice	----	----	----	18.89	16.41	----	----	----	----	----	----	----	----
Cull and common	----	----	----	15.24	14.24	----	----	----	----	----	----	----	----
Yearling wethers, medium to choice	12.00	11.11	10.56	11.86	12.48	13.31	11.76	11.08	10.85	11.14	10.70	9.32	11.55
Ewes—													
Common to choice	7.54	7.29	7.26	7.86	6.79	5.71	5.88	6.19	5.89	5.92	5.66	5.54	6.48
Cull	3.83	3.73	3.75	4.08	3.60	3.09	3.10	3.36	3.28	[illegible]	3.10	2.92	3.44
Feeding lambs, medium to choice	15.02	13.74	13.27	12.97	----	13.21	12.90	12.79	13.14	[illegible].93	12.50	11.76	----

EAST ST. LOUIS

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Slaughter sheep and lambs:													
Lambs—													
Light and handy weight (under 84 pounds), medium to choice	14.36	13.15	12.87	13.46	13.96	15.03	13.08	13.02	12.98	12.78	12.45	11.85	[illegible]
Heavyweight (92 pounds up), medium to choice	----	11.88	11.87	12.51	13.06	----	----	----	----	----	----	----	----
All weights, cull and common	12.19	11.71	11.49	11.74	11.40	11.82	10.48	10.32	10.26	10.15	9.95	9.44	10.91
Spring lambs—													
Medium to choice	----	----	----	----	16.18	----	----	----	----	----	----	----	----
Cull and common	----	----	----	----	13.57	----	----	----	----	----	----	----	----
Yearling wethers, medium to choice	11.75	11.11	10.50	11.03	11.72	11.78	10.23	10.19	10.03	9.96	9.64	9.13	10.59
Ewes—													
Common to choice	6.90	7.05	7.00	7.47	6.43	4.52	4.42	4.65	4.50	4.50	4.72	5.00	5.30
Cull	3.28	3.62	3.62	3.83	3.44	2.40	2.22	2.25	2.25	2.25	2.31	2.50	[illegible]

FORT WORTH

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Slaughter sheep and lambs:													
Lambs—													
Light and handy weight (under 84 pounds), medium to choice	----	----	----	----	11.97	12.80	11.25	11.34	12.20	12.13	12.21	10.92	----
All weights, cull and common	----	----	----	----	10.00	9.97	8.50	8.55	9.22	9.42	9.56	8.70	----
Spring lambs, medium to choice	----	----	----	----	14.47	----	----	----	----	----	----	----	----
Yearling wethers, medium to choice	----	----	----	----	10.50	10.75	10.00	10.00	10.00	10.00	9.95	9.63	----
Ewes—													
Common to choice	6.25	6.25	6.25	6.25	5.75	5.38	5.25	5.25	5.34	5.38	5.38	5.13	5.66
Cull	3.00	3.00	3.00	3.00	2.50	2.44	2.38	2.38	2.38	2.38	2.38	2.20	2.59

KANSAS CITY

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Slaughter sheep and lambs:													
Lambs—													
Light and handy weight (under 84 pounds), medium choice	14.03	12.58	12.47	13.36	13.81	14.94	13.38	13.34	12.83	13.04	12.60	11.70	13.17
All weights, cull and common	11.53	10.72	10.75	11.52	11.68	11.69	10.17	10.04	9.90	10.08	9.82	9.16	10.59
Spring lambs—													
Medium to choice	----	----	14.93	15.12	15.86	----	----	----	----	----	----	----	----
Cull and common	----	----	12.44	12.75	13.22	----	----	----	----	----	----	----	----
Yearling wethers, medium to choice	11.52	10.54	10.63	11.07	11.40	11.84	10.37	10.50	10.36	10.12	9.77	8.88	10.58
Ewes—													
Common to choice	6.98	6.85	6.95	7.30	6.00	5.02	5.34	5.47	5.47	5.24	5.12	5.26	5.92
Cull	3.35	3.32	3.35	3.56	2.65	2.29	2.44	2.70	2.90	2.79	2.68	2.75	2.90
Feeding lambs, medium to choice	----	----	----	----	----	----	----	----	11.88	11.80	11.84	11.06	----

TABLE 443.—*Sheep: Average price per 100 pounds at six markets, by months, 1926*—Continued

OMAHA

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Slaughter sheep and lambs:													
Lambs—													
Light and handy weight (under 84 pounds), medium to choice	*Dols.* 14. 06	*Dols.* 12. 69	*Dols.* 12. 60	*Dols.* 13. 70	*Dols.* 14. 26	*Dols.* 14. 95	*Dols.* 13. 22	*Dols.* 13. 14	*Dols.* 12. 81	*Dols.* 12. 86	*Dols.* 12. 40	*Dols.* 11. 72	*Dols.* 13. 20
Heavy weight (92 pounds up), medium to choice	-----	-----	11. 34	12. 58	13. 56	-----	-----	-----	-----	-----	-----	-----	-----
All weights, cull and common	12. 14	11. 29	10. 92	12. 06	12. 26	12. 46	10. 63	10. 42	10. 00	10. 26	9. 82	9. 22	10. 96
Yearling wethers, medium to choice	11. 36	10. 33	9. 85	10. 58	11. 58	12. 78	10. 38	9. 96	9. 75	9. 92	9. 31	8. 82	10. 38
Ewes—													
Common to choice	6. 99	6. 52	6. 65	7. 41	6. 47	5. 30	5. 43	5. 69	5. 49	5. 46	5. 25	5. 17	5. 99
Cull	3 61	3. 21	3. 10	3. 66	3. 12	2. 75	2 86	3. 17	2. 94	2. 78	2. 50	2. 50	3. 02
Feeding lambs, medium to choice	14. 34	13. 17	12. 23	12. 94	-----	12. 79	12. 69	12. 69	12. 54	12. 47	12. 10	11. 89	-----

SOUTH ST. PAUL

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Slaughter sheep and lambs:													
Lambs—													
Light and handy weight (under 84 pounds), medium to choice	13. 88	12. 70	12. 43	13. 03	13. 68	14. 83	12. 76	12. 82	12. 48	12. 69	12. 18	11. 41	12. 91
All weights, cull and common	11. 55	10. 86	10. 57	11. 14	11. 26	12. 17	10. 39	10. 10	9. 85	10. 19	9. 56	8. 87	10. 54
Spring lambs—													
Medium to choice	-----	-----	-----	-----	15 62	-----	-----	-----	-----	-----	-----	-----	-----
Cull and common	-----	-----	-----	-----	13. 30	-----	-----	-----	-----	-----	-----	-----	-----
Ewes—													
Common to choice	6. 80	6. 68	6. 60	7. 20	6. 18	5. 30	5. 42	5. 55	5. 25	5. 41	5 18	5. 07	5. 89
Cull	2. 88	2. 7[illegible]	2. 90	3. 50	2. 81	2. 50	2. 64	2. 86	2. 75	2. 70	2 73	2. 66	2. 81

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

TABLE 444.—*Sheep and lambs: Trend of average farm prices and average market prices per 100 pounds, at Chicago, 1910–1926*

Year	Farm price [1]		Average market price at Chicago		Price relatives, August, 1909–July, 1914=100			
					Farm price		Market price	
	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs	Sheep	Lambs
	Dollars	*Dollars*	*Dollars*	*Dollars*				
1910	5. 24	6. 40	5. 26	7. 59	115. 2	108. 5	108. 7	105. 6
1911	4. 16	5. 19	3. 94	5. 93	91. 4	88. 0	81. 4	82. 5
1912	4. 24	5. 62	4. 60	7. 18	93. 2	95. 3	95. 0	99. 9
1913	4. 55	6. 06	5. 19	7. 69	100. 0	102. 7	107. 2	107. 0
1914	4. 79	6. 34	5. 56	7. 99	105. 3	107. 5	114. 9	111. 1
1915	5. 27	6. 86	6. 36	9. 05	115. 8	116. 3	131. 4	125. 9
1916	6. 29	8. 22	7. 82	10. 77	138. 2	139. 3	161. 6	149. 8
1917	9. 45	12. 31	11. 04	15. 68	207. 7	208. 6	228. 1	218. 1
1918	10. 95	13. 93	12. 44	16. 98	240. 7	236. 1	257. 0	236. 2
1919	9. 63	12. 96	10. 47	16. 31	211. 6	219. 7	216. 3	226. 8
1920	8. 51	11. 85	9. 49	15. 47	187. 0	200. 8	196. 1	215. 2
1921	4. 65	7. 19	5. 13	9. 86	102. 2	121. 9	106. 0	137. 1
1922	5. 96	9. 76	7. 15	13. 68	131. 0	165. 4	147. 7	190. 3
1923	6. 65	10. 50	7. 10	13. 89	146. 2	178. 0	146. 7	193. 2
1924	6. 81	10. 75	7. 57	14. 57	149. 7	182. 2	156. 4	202. 6
1925	7. 70	12. 30	8. 16	15. 66	169. 2	208. 5	168. 6	217. 8
1926	7. 43	11. 56	7. 25	14. 26	163. 3	195. 9	149. 8	198. 3

Division of Statistical and Historical Research. Farm prices from Division of Crop and Livestock Estimates; market prices from data of the reporting service of the Division of Livestock, Meats, and Wool.

[1] Weighted average.

TABLE 445.—*Sheep and lambs: Monthly slaughter under Federal inspection, 1907–1926*

Year	January	February	March	April	May	June	July
1907	1,016,701	837,329	841,526	861,905	768,571	735,065	864,940
1908	871,642	724,857	677,048	663,624	731,785	841,716	891,112
1909	906,338	805,561	903,369	839,010	712,103	842,528	964,114
1910	903,242	770,796	726,675	692,897	795,699	926,900	967,378
1911	1,129,800	1,018,696	1,059,388	974,072	1,085,306	1,146,429	1,149,617
1912	1,383,239	1,151,431	1,105,620	970,574	962,679	1,028,426	1,181,246
1913	1,192,485	960,882	883,197	1,048,656	1,127,345	1,134,615	1,273,496
1914	1,296,625	1,112,500	1,143,188	1,149,928	1,084,577	1,113,437	1,171,105
1915	1,196,268	945,912	986,203	829,906	739,051	882,662	983,684
1916	976,417	903,755	861,470	768,683	854,014	989,824	930,169
1917	956,416	818,640	861,331	777,346	632,451	710,031	688,205
1918	779,934	655,015	735,595	613,814	659,063	737,298	869,403
1919	1,003,880	753,940	737,836	807,766	894,324	931,466	1,160,470
1920	951,607	828,426	787,867	713,796	670,674	817,553	1,048,428
1921	1,068,346	958,019	1,075,213	1,040,628	984,903	1,116,069	1,059,902
1922	954,329	775,841	837,216	739,117	872,069	1,[illegible],136	964,109
1923	1,021,211	836,473	977,426	959,697	972,291	914,372	981,791
1924	1,083,095	911,988	868,398	859,774	959,360	975,866	1,050,734
1925	990,490	854,409	984,254	1,012,142	1,029,633	999,321	1,071,074
1926	1,039,271	987,730	1,162,503	994,288	958,802	1,080,886	1,041,683

Year	August	September	October	November	December	Total
1907	900,462	891,953	972,656	793,155	768,707	10,252,070
1908	932,367	1,064,376	1,047,568	928,266	930,305	10,304,666
1909	1,018,698	1,153,327	1,169,232	1,028,673	999,684	11,342,637
1910	1,095,036	1,154,289	1,206,237	1,121,698	1,044,173	11,408,020
1911	1,268,405	1,256,948	1,428,228	1,303,770	1,199,787	14,020,446
1912	1,389,635	1,439,630	1,722,955	1,424,063	1,219,756	14,979,254
1913	1,243,440	1,486,305	1,513,922	1,257,546	1,283,870	14,405,759
1914	1,169,430	1,379,097	1,330,529	1,111,857	1,167,069	14,229,342
1915	1,139,236	1,219,649	1,116,002	1,132,499	1,040,693	12,211,765
1916	1,172,838	1,158,116	1,172,118	1,120,852	1,033,110	11,941,366
1917	765,939	740,122	821,933	763,781	808,799	9,344,994
1918	936,683	1,028,645	1,194,298	1,139,292	970,927	10,319,877
1919	1,233,883	1,291,979	1,413,805	1,227,190	1,234,577	12,691,116
1920	1,041,580	1,150,776	1,067,821	968,235	932,417	10,982,180
1921	1,236,092	1,249,032	1,285,430	1,040,390	889,980	13,004,904
1922	1,023,787	1,013,281	981,232	882,213	857,611	10,028,941
1923	956,580	989,560	1,046,239	915,229	977,681	11,528,550
1924	1,063,108	1,149,675	1,117,514	949,963	971,916	11,990,831
1925	1,030,751	1,085,837	1,083,073	878,892	981,118	12,000,994
1926	1,093,251	1,224,325	1,167,451	1,038,859	1,171,829	12,960,878

Bureau of Animal Industry.

TABLE 446.—*Mutton and lamb, frozen: Cold-storage holdings, United States, 1916–1926*

[Thousand pounds—i. e., 000 omitted]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept 1	Oct 1	Nov. 1	Dec. 1
Average:												
1916–1920	8,063	7,329	6,482	5,115	4,355	4,669	4,068	3,744	5,547	8,853	14,639	17,110
1921–1925	16,888	18,524	14,478	10,368	7,413	5,364	4,088	3,288	2,927	2,964	3,379	3,608
1916	4,976	5,286	5,812	5,084	3,858	2,525	1,939	2,098	2,135	2,579	3,465	5,000
1917	4,886	5,895	4,949	4,872	4,369	3,508	4,380	3,912	2,716	2,768	4,194	5,406
1918	7,403	6,315	7,855	5,599	3,348	3,869	2,429	3,150	4,046	5,275	8,645	9,035
1919	12,760	11,360	8,013	6,505	7,623	7,718	7,279	7,263	7,817	8,318	7,894	9,409
1920	16,290	7,787	5,781	3,517	2,579	5,735	4,311	2,299	11,021	25,325	48,997	56,702
1921	68,032	78,082	59,304	38,520	25,129	15,877	8,714	6,751	5,993	5,993	6,840	7,520
1922	6,444	3,914	2,863	2,878	2,071	2,310	3,720	3,308	3,376	3,473	3,458	3,633
1923	4,523	5,980	5,758	6,635	5,774	4,445	3,556	2,752	1,785	1,719	1,997	2,014
1924	2,493	2,306	2,173	1,719	2,093	2,273	2,917	2,257	2,230	2,525	3,166	3,326
1925	2,949	2,336	2,294	2,090	1,998	1,913	1,535	1,349	1,339	1,112	1,435	1,549
1926	1,820	2,354	3,346	3,289	2,393	1,697	1,871	1,813	1,929	2,234	2,814	3,166

Cold Storage Report Section.

TABLE 447.—*Sheep, lamb, and mutton: Statement of the livestock and meat situation, by months, 1926*

Item	Unit	Jan.	Feb.	Mar.	Apr.	May	June	July
Inspected slaughter	Thousands	1,039	988	1,163	994	959	1,081	1,042
Carcasses condemned	do	1	1	1	1	1	1	1
Average live weight	Pounds	87	88	87	85	79	75	76
Average dressed weight	do	41	42	41	41	38	37	36
Total dressed weight (carcass, not including condemned)	1,000 pounds	42,684	40,945	47,611	40,318	36,727	39,818	37,985
Storage first of month, fresh lamb and mutton	do	1,820	2,354	3,346	3,289	2,393	1,697	1,871
Exports, fresh lamb and mutton [1]	do	49	47	38	71	199	193	293
Imports, fresh lamb and mutton	do	425	108	46	104	137	225	86
Average cost for slaughter per 100 pounds	Dollars	14.12	12.66	12.46	13.14	13.60	13.86	12.75

Item	Unit	Aug.	Sept.	Oct.	Nov.	Dec	Total or average
Inspected slaughter	Thousands	1,093	1,224	1,167	1,039	1,172	12,961
Carcasses condemned	do	1	2	2	2	2	16
Average live weight	Pounds	77	77	79	82	83	81
Average dressed weight	do	37	37	38	38	39	39
Total dressed weight (carcass, not including condemned)	1,000 pounds	40,260	45,607	43,892	39,737	45,354	500,888
Storage first of month, fresh lamb and mutton	do	1,813	1,929	2,234	2,814	3,166	2,394
Exports, fresh lamb and mutton [1]	do	136	79	48	42	35	1,230
Imports, fresh lamb and mutton	do	126	369	561	418	760	3,305
Average cost for slaughter per 100 pounds	Dollars	12.79	12.71	12.51	11.97	11.81	12.86

Division of Statistical and Historical Research. Inspected slaughter from reports of Bureau of Animal Industry. Weights and storage holdings from reports of the Cold Storage Report Section; exports and imports from Bureau of Foreign and Domestic Commerce.

[1] Including reexports.

TABLE 448.—*Mutton: International trade, average 1911–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31: Average, 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina		148,457		175,208		184,311		202,576
Australia	7	149,958	[1] 37	[1] 39,805	[1] 47	[1] 50,271		[1] 82,219
Canada	4,717	48	1,350	1,707	1,367	922	1,321	2,641
Netherlands	76	17,212	2,293	14,138	1,347	17,566	1,067	17,081
New Zealand		235,509		249,954		278,426	1	291,039
Union of South Africa	1,914	75	73	179	46	176	1	184
Uruguay		3,262		34,509		34,417		22,658
PRINCIPAL IMPORTING COUNTRIES								
Belgium	(2)	(2)	2,013	318	2,975	489	2,905	829
Denmark	3,828	344	1,651	211	1,106	61	629	35
France	980	334	20,555	813	24,475	251	22,741	172
Germany	1,046	350	2,962	45	3,156	711	2,002	2,123
Hongkong			457	2	502	3	[3] 133	[3] 1
Sweden	1,218	100	422	167	651	105		60
United Kingdom	596,899		663,147		577,176		622,482	
United States	185	4,146	5,215	2,087	2,166	1,445	2,770	1,464
Other countries	924	489	993	5,970	7,417	2,035	2,383	1,250
Total	611,744	560,284	701,108	525,113	622,431	571,189	658,435	624,331

Division of Statistical and Historical Research. Official sources.

[1] Year beginning July 1. [2] Not separately stated. [3] Six months.

WOOL

TABLE 449.—*Wool, raw: Production, imports, exports, and apparent consumption, United States, 1910–1926*

[Thousands pounds—i. e., 000 omitted]

Year	Production			Imports [1]	Reexports [1]	Net imports	Exports of domestic wool	Excess of imports over all exports [1]	Apparent consumption
	Fleece	Pulled	Total						
1910	281, 363	40, 000	321, 363	180, 135	9, 055	171, 080	[2] 48	171, 032	402, 395
1911	277, 548	41, 000	318, 548	155, 923	3, 511	152, 412	([3])	152, 412	470, 960
1912	262, 543	41, 500	304, 043	238, 118	1, 816	236, 302	([4])	236, 302	540, 345
1913	252, 675	43, 500	296, 175	151, 581	3, 860	147, 721	[2] 77	147, 644	443, 819
1914	247, 192	43, 000	290, 192	256, 501	6, 342	250, 159	[2] 335	249, 823	540, 015
1915	245, 726	40, 000	285, 726	402, 611	2, 081	400, 530	[2] 8, 158	392, 372	678, 098
1916	244, 890	43, 600	288, 490	442, 650	2, 128	440, 522	3, 919	436, 603	725, 093
1917	241, 892	40, 000	281, 892	416, 137	1, 272	414, 865	1, 827	413, 038	694, 930
1918	256, 870	42, 000	298, 870	447, 426	452	446, 974	[illegible]	446, 567	745, 437
1919	249, 958	48, 300	298, 258	438, 782	5, 134	433, 647	2, 840	430, 807	729, 065
1920	244, 179	42, 900	287, 079	254, 905	12, 393	242, 512	8, 845	233, 666	520, 745
1921	235, 129	48, 500	283, 629	316, 605	1, 552	315, 053	1, 927	313, 126	596, 755
1922	221, 713	42, 000	263, 713	366, 538	4, 225	362, 314	453	361, 861	625, 574
1923	225, 696	42, 500	268, 196	388, 345	23, 557	364, 788	535	364, 253	632, 449
1924	235, 575	43, 800	279, 375	262, 655	27, 476	235, 179	309	234, 869	514, 244
1925	245, 562	46, 800	292, 362	336, 646	7, 087	329, 559	273	329, 286	621, 648
1926 preliminary	260, 901	50, 000	310, 901	299, 451	14, 082	285, 370	292	285, 078	595, 979

Division of Marketing Livestock, Meats, and Wool. Production figures 1910–1913 from the National Association of Wool Manufacturers; 1914–1926 from the Division of Crop and Livestock Estimates; imports and exports from the Bureau of Foreign and Domestic Commerce.

[1] Hair of Angora goat, alpaca, and other like animals included in imports and reexports prior to 1914 and in exports for all years.
[2] Exports for fiscal years ended June 30 of the years shown.
[3] Included in all other articles.
[4] No transactions.

TABLE 450.—*Wool, fleece: Estimated production, by States, 1920–1926*

State	Production							Weight per fleece[1]							Number of fleeces						
	1920	1921	1922	1923	1924	1925	1926[2]	1920	1921	1922	1923	1924	1925	1926[2]	1920	1921	1922	1923	1924	1925	1926
	1,000 lbs.	*1,000 lbs.*	*1,000 lbs.*	*1,000 lbs.*	*1,000 lbs.*	*1,000 lbs.*	*1,000 lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Thousands*	*Thousands*	*Thousands*	*Thousands*	*Thousands*	*Thousands*	*Thousands*
Maine	670	540	484	479	493	526	559	6.2	6.0	6.2	6.3	6.4	6.5	6.5	108	90	78	76	77	81	88
New Hampshire	160	143	113	109	94	102	110	6.4	6.5	6.3	6.4	6.3	6.4	6.5	25	22	18	17	15	16	17
Vermont	402	322	270	252	277	252	277	7.3	7.0	7.3	7.2	7.3	7.2	7.3	55	46	37	35	38	35	38
Massachusetts	104	96	84	73	67	68	62	6.1	6.0	6.0	6.1	6.1	6.2	6.2	17	16	14	12	11	11	10
Rhode Island	18	12	12	13	12	12	12	6.1	6.0	6.2	6.3	6.1	6.2	6.2	3	2	2	2	2	2	2
Connecticut	58	54	48	40	41	41	43	5.8	6.0	6.0	5.7	5.8	5.9	6.1	10	9	8	7	7	7	7
New York	3,387	2,989	2,797	2,599	2,708	2,898	3,081	7.1	7.0	7.1	7.2	7.3	7.3	7.3	477	427	394	361	371	397	422
New Jersey	58	50	42	36	31	31	32	6.5	6.2	6.0	6.0	6.2	6.2	6.3	9	8	7	6	5	5	5
Pennsylvania	3,206	3,053	3,073	2,990	2,766	2,805	2,730	7.0	7.1	7.3	7.4	7.6	7.5	7.3	458	430	421	404	364	374	374
Ohio	14,929	13,691	13,120	13,699	14,167	14,467	14,760	7.8	7.7	7.8	7.9	8.1	8.1	8.2	1,914	1,778	1,682	1,734	1,749	1,786	1,800
Indiana	3,485	3,499	3,204	3,380	3,391	3,562	3,715	7.2	7.2	7.2	7.3	7.2	7.3	7.4	484	486	445	463	471	438	502
Illinois	3,868	3,578	3,078	2,978	3,334	3,419	3,648	7.6	7.5	7.4	7.3	7.2	7.4	7.6	509	477	416	408	463	462	480
Michigan	7,020	6,346	6,256	6,478	6,880	7,416	7,920	7.8	7.6	7.8	7.9	8.0	8.0	8.0	900	835	802	820	860	927	990
Wisconsin	2,960	2,520	2,278	2,131	2,109	2,250	2,508	7.4	7.2	7.3	7.4	7.4	7.5	7.6	400	350	312	288	285	300	330
Minnesota	2,904	3,066	2,781	2,645	2,886	3,151	3,634	7.1	7.3	7.3	7.6	7.8	7.8	7.9	409	420	381	348	370	404	460
Iowa	5,968	5,632	5,226	5,242	5,360	5,360	5,440	7.7	7.6	7.8	7.8	8.0	8.0	8.0	775	741	670	672	670	670	680
Missouri	7,121	6,596	5,520	5,396	5,236	5,208	5,250	6.9	6.8	6.9	7.1	7.0	7.0	7.0	1,032	970	800	760	748	744	750
North Dakota	1,948	1,654	1,398	1,440	1,853	2,263	2,772	7.7	7.8	7.9	8.0	8.2	8.2	8.3	253	212	177	180	226	276	334
South Dakota	4,802	4,548	4,484	4,466	4,312	4,446	4,714	7.0	7.3	7.6	7.7	7.7	7.8	8.1	686	623	590	580	560	570	582
Nebraska	2,332	1,891	1,875	2,020	1,998	2,212	2,175	7.5	7.3	7.5	7.4	7.4	7.5	7.5	311	259	250	273	270	295	290
Kansas	2,236	1,939	1,676	1,231	1,399	1,656	1,679	7.1	6.9	7.1	7.2	7.1	7.2	7.3	315	281	236	171	197	230	230
Delaware	13	19	12	12	12	12	12	6.4	6.2	6.0	6.0	6.0	6.0	6.0	2	3	2	2	2	2	2
Maryland	500	476	479	479	433	439	472	6.1	6.1	6.3	6.3	6.1	6.1	6.3	82	78	76	76	71	72	75
Virginia	1,478	1,457	1,387	1,401	1,398	1,485	1,630	4.8	4.7	4.8	4.7	4.6	4.7	5.0	308	310	289	298	304	316	326
West Virginia	2,295	2,274	2,274	2,361	2,236	2,272	2,311	5.0	4.9	4.9	5.2	5.2	5.2	5.3	459	464	464	454	430	437	436
North Carolina	336	353	331	317	284	270	304	4.1	4.1	4.3	4.4	4.5	4.5	4.6	82	86	77	72	63	60	66
South Carolina	76	56	56	49	47	48	45	3.6	3.5	3.7	3.8	3.9	4.0	4.1	21	16	15	13	12	12	11
Georgia	186	186	173	165	143	131	139	3.2	3.1	3.2	3.3	3.4	3.2	3.4	58	60	54	50	42	41	41
Florida	159	146	156	148	137	147	144	3.0	2.8	3.0	2.9	2.8	3.0	3.0	53	52	52	51	49	49	48
Kentucky	3,027	2,999	2,938	2,889	2,880	3,125	3,278	4.7	4.7	4.7	4.6	4.5	4.8	4.8	644	638	625	628	640	651	688

Tennessee	1,423	1,272	1,200	1,164	1,136	1,144	1,118	4.3	4.0	4.0	4.0	4.1	4.3	4.3	331	318	300	291	277	266	280
Alabama	234	231	218	204	170	155	136	3.5	3.3	3.4	3.4	3.4	3.3	3.5	67	70	64	60	50	47	39
Mississippi	435	381	366	339	323	304	288	3.2	3.1	3.1	3.2	3.2	3.2	3.2	136	123	118	106	101	95	90
Arkansas	360	331	306	271	225	202	201	4.5	4.3	4.5	4.6	4.5	4.7	4.9	80	77	68	59	50	43	41
Louisiana	353	316	316	310	304	294	275	3.3	3.1	3.1	3.1	3.2	3.3	3.2	107	102	102	100	95	89	86
Oklahoma	641	555	518	338	385	394	455	7.2	7.3	7.3	7.2	7.4	7.3	7.6	89	76	71	47	52	54	60
Texas	13,200	19,345	19,035	19,639	24,806	25,280	27,297	7.0	7.3	7.1	7.4	7.9	8.0	8.1	2,600	2,650	2,681	2,662	3,140	3,160	3,370
Montana	16,800	17,052	19,043	18,751	19,522	20,640	23,320	8.0	8.4	8.4	8.5	8.6	8.6	8.8	2,100	2,030	2,267	2,206	2,270	2,400	2,650
Idaho	16,080	15,115	13,704	14,952	14,450	14,309	14,507	8.0	8.1	8.0	8.4	8.5	8.2	8.9	2,010	1,860	1,713	1,780	1,700	1,745	1,630
Wyoming	20,655	20,750	19,024	18,293	19,090	21,362	22,338	8.1	8.3	8.2	8.3	8.3	8.6	8.5	2,550	2,500	2,320	2,204	2,300	2,484	2,628
Colorado	6,266	6,325	6,138	6,486	6,486	6,862	7,740	6.5	6.7	6.6	6.9	6.9	7.3	7.5	964	944	930	940	940	940	1,032
New Mexico	12,555	12,301	11,382	10,647	11,224	11,084	12,060	6.2	6.2	6.0	6.3	6.1	5.8	5.9	2,025	1,984	1,897	1,690	1,840	1,911	2,044
Arizona	7,654	6,996	7,182	7,202	6,448	6,458	6,758	6.3	6.0	6.5	6.5	6.2	6.3	6.2	1,215	1,166	1,105	1,108	1,040	1,025	1,090
Utah	16,170	16,848	15,800	17,168	17,970	18,010	19,430	7.7	8.0	7.7	8.0	8.3	8.4	8.8	2,100	2,106	2,052	2,146	2,165	2,144	2,208
Nevada	8,467	7,344	6,990	8,413	7,597	7,500	8,730	7.2	7.2	6.9	7.6	7.8	7.2	7.9	1,176	1,020	1,013	1,107	974	1,050	1,105
Washington	5,176	4,312	3,612	4,027	4,365	4,560	4,194	8.7	8.8	8.6	9.3	9.7	9.5	9.8	595	490	420	433	450	480	428
Oregon	17,388	16,903	15,355	14,790	15,840	16,958	18,321	8.4	8.6	8.4	8.7	8.8	8.8	9.3	2,070	1,966	1,828	1,700	1,800	1,927	1,970
California	19,616	18,562	15,899	17,124	18,250	19,912	20,276	7.6	7.5	7.3	7.4	7.3	7.5	7.4	2,581	2,475	2,178	2,314	2,500	2,655	2,740
United States	244,179	235,129	221,713	225,696	235,575	245,562	260,901	7.3	7.3	7.3	7.5	7.6	7.6	7.8	33,655	32,152	30,521	30,214	31,116	32,235	33,548

Division of Crop and Livestock Estimates.

[1] In States where sheep are shorn twice a year this figure covers wool per head of sheep shorn and not weight per fleece.

[2] Preliminary.

TABLE 451.—*Wool: Estimated world production in grease, average 1909–1913, annual 1923–1926*

[Thousand pounds—i. e., 000 omitted]

Country	Average, 1909–1913 [1]	1923	1924	1925	1926, preliminary
NORTH AND CENTRAL AMERICA					
Canada	13, 188	15, 539	15, 112	15, 553	[2] 16, 200
Newfoundland	200	217	217	217	(217)
United States:					
Fleece	272, 248	224, 330	242, 405	253, 907	269, 054
Pulled	41, 400	42, 500	43, 800	46, 800	[3] 50, 000
Mexico	7, 000	2, 070	2, 590	1, 740	1, 700
Hawaii	350	261	260	260	(260)
Central American and West Indies	1, 000	750	750	750	(750)
Total North America, Central America, and West Indies	335, 390	285, 670	305, 130	319, 130	338, 980
SOUTH AMERICA					
Peru	8, 130	10, 460	11, 630	10, 050	10, 000
Chile	17, 555	30, 400	29, 300	22, 500	(22, 500)
Brazil	35, 000	18, 669	19, 000	19, 467	19, 000
Uruguay [4]	133, 101	100, 000	91, 000	116, 000	117, 000
Argentina [5]	332, 321	341, 713	324, 000	313, 000	320, 000
Falkland Islands	4, 821	4, 465	4, 381	4, 400	(4, 400)
Other	5, 000	5, 000	5, 000	5, 000	(5, 000)
Total, South America	535, 930	510, 710	484, 310	490, 420	497, 900
EUROPE					
Iceland	2, 083	1, 537	1, 865	1, 860	(1, 860)
United Kingdom [6]	136, 021	101, 965	104, 668	109, 853	115, 000
Norway	5, 840	5, 950	5, 880	5, 940	(5, 940)
Sweden	3, 375	2, 700	2, 172	2, 200	(2, 200)
Denmark	3, 488	2, 110	1, 720	1, 486	1, 340
Netherlands	3, 556	5, 100	5, 842	5, 842	6, 000
Belgium	1, 060	825	850	840	(840)
France	81, 600	41, 750	42, 360	43, 410	44, 970
Spain	77, 972	95, 337	91, 266	90, 821	98, 730
Portugal	5, 960	6, 680	6, 620	6, 560	(6, 560)
Italy	51, 000	55, 000	55, 100	55, 100	(55, 100)
Switzerland	355	470	440	410	372
Germany	43, 893	48, 980	51, 960	50, 470	41, 830)
Austria	1, 323	2, 600	2, 043	1, 900	(1, 900
Czechoslovakia	5, 818	4, 300	4, 300	6, 300	(6, 300)
Hungary	16, 842	11, 111	12, 699	13, 234	13, 200
Yugoslavia	35, 500	35, 527	27, 720	28, 640	(28, 640)
Greece	20, 010	19, 244	18, 200	17, 100	16, 100
Bulgaria	29, 100	27, 800	26, 600	25, 450	25, 400
Rumania	45, 600	50, 500	52, 800	54, 940	53, 100
Lithuania	3, 690	4, 520	4, 473	4, 660	(4, 660)
Latvia	2, 690	4, 020	3, 371	3, 190	3, 110
Estonia	1, 409	1, 930	1, 787	2, 090	1, 930
Poland	13, 420	7, 310	7, 500	7, 700	7, 900
Finland	5, 300	6, 200	5, 900	5, 900	(5, 900)
Russia [7]	139, 190	87, 700	105, 377	117, 380	116, 000
Other	500	500	500	500	(500)
Total, Europe	736, 600	631, 670	644, 010	663, 770	665, 380

[1] Average for years 1909–1913 wherever possible, otherwise for any year or years within or near this period for which statistics are available.
[2] Estimated for total wool clip on basis of number of sheep and lambs in June, 1926.
[3] Unofficial estimate based on increase in number of sheep and lambs slaughtered.
[4] Average 1909–1913, 1923, and 1924 export calendar years. Estimate for 1925 and 1926 furnished by commercial attaché, Sept. 18, 1926, and Consul O. Gaylord Marsh, Oct. 7, 1926.
[5] Average 1909–1913. Estimates furnished by Consul Henry Robertson from La Prensa of Aug. 18, 1919. Also published in "The Economic Development of the Argentine Republic in Last Fifty Years," 1919, by Ernesto Tornquist & Co. (Figures based on exports and domestic consumption.) Year 1923, Ministry of Agriculture, Mar. 20, 1924; year 1924, official exports October to September, 1924–25, stocks and estimated domestic consumption; year 1925, exports October–September from Review of River Plate, stocks and domestic consumption (official exports for last few months not available); year 1926, estimate based on estimate for 1925 and information furnished by Assistant Commercial Attaché H. B. MacKensie, Oct. 20, 1926, indicating an increase in production of about 8,000 bales over 1925.
[6] Estimates of Yorkshire Observer. These have been used instead of official figures as comparable estimates are available for all years.
[7] Estimates for present territory based on official statistics for years 1909–1913; year 1924, official estimate from L'Economie de L'Union des R. S. S. 1925, p. 290; other years based on numbers of sheep and average weight of fleece; 1926, based on information from Economic Life, Nov. 3, 1926, that procurement of wool in Russia in 1926 is 1 per cent below 1925.

TABLE 451.—*Wool: Estimated world production in grease, average 1909–1913, annual 1923–1926*—Continued

[Thousand pounds—i. e., 000 omitted]

Country	Average, 1909–1913	1923	1924	1925	1926, preliminary
AFRICA					
Morocco	9,650	21,650	24,970	28,200	(28,200)
Algeria	35,221	17,865	33,000	41,000	45,000
Tunis	2,370	6,600	4,930	4,690	3,310
French West Africa	570	1,960	1,540	1,330	(1,330)
Egypt	4,345	3,106	4,416	4,185	4,900
Union of South Africa	157,690	187,290	185,280	200,000	190,000
South West Africa (Prot.)	100	147	197	181	200
Basutoland	8,620	10,265	12,600	12,900	13,000
Madagascar	2,700	881	880	880	(880)
Other	2,000	2,000	2,000	2,000	(2,000)
Total Africa	223,270	251,760	269,730	295,370	288,820
ASIA					
Turkey [8]	60,000	36,900	32,100	35,500	35,000
Iraq (Mesopotamia)	13,400	8,100	10,000	8,600	6,000
Persia	12,146	18,000	19,0[illegible]	13,000	(13,000)
Syria	5,000	4,960	4,400	3,300	3,500
Afghanistan	17,120	15,000	15,000	15,000	(15,000)
India	65,000	67,074	69,000	68,000	(68,000)
Russia [7]	61,360	49,000	55,100	57,700	57,100
China [9]	37,318	46,948	64,710	56,820	(56,820)
Other	1,000	1,000	1,000	1,000	(1,000)
Total Asia	272,340	246,980	270,310	258,900	255,420
OCEANIA					
Australia	727,709	590,820	[10] 729,243	[11] 770,000	[11] 775,000
New Zealand	179,942	208,979	208,269	200,381	203,000
Other	100	100	100	100	----------
Total Oceania	907,750	799,900	937,610	970,480	978,000
Estimated world total	3,011,280	2,726,600	[12] 2,911,110	[12] 2,998,160	[12] 3,024,500
Estimates of U. S. Dept. Com	3,231,477	2,719,453	2,836,539	2,892,416	----------
Estimates of Natl. Assoc. Wool Mfgrs	2,905,850	2,720,840	2,720,070	2,826,498	----------

Division of Statistical and Historical Research.

In this table the main object has been to ascertain the correct trend of wool production in recent years compared with pre-war in the world and in the separate countries. Estimates for all years are for present boundaries. In compiling this table a careful study has been made of estimates and methods of estimating used by the United States Department of Agriculture in compiling the world wool production for the years 1891–1906 published in the Yearbook for 1908 which forms the basis of many estimates used by the United States Department of Commerce and the National Association of Wool Manufacturers in compiling their world wool tables since that date. Careful attention has also been given to the estimates of these last two agencies. Official estimates have been used wherever available. In most cases these official estimates are not actual censuses but estimates obtained by multiplying the number of sheep on hand at a given date by a more or less accurate average weight of fleece per sheep and per lamb, which may or may not have been determined by commercial experience, and in some cases includes estimates for pulled wool: that is, wool obtained from slaughtered sheep. Comparatively few countries publish official estimates. In the absence of official estimates the commercial estimates as furnished by agricultural or commercial representatives of the United States in foreign countries have been used. Those not being available, estimates for some countries have been obtained by using exports alone, or exports, stocks, and domestic consumption. For other countries estimates have been obtained by multiplying the number of sheep on hand by an average weight per fleece as obtained from official sources or from United States Government representatives abroad. The trend of wool production is assumed to follow in general that of sheep as there is probably not a very great variation in the average weight of fleece from year to year except in countries having great climatic changes.

[7] Estimates for present territory based on official statistics for years 1909–1913; year 1924, official estimate from L'Economie de L'Union des R. S. S. 1925, p. 290; other years based on numbers of sheep and average weight of fleece; 1926, based on information from Economic Life, Nov. 3, 1926, that procurement of wool in Russia in 1926 is 1 per cent below 1925.

[8] Small amount now produced in European Turkey included. Estimates of wool production based on official sheep and wool data for 1907 and 1909 and average weight of fleece. A rough approximate estimate for present boundaries prewar has been obtained by subtracting production in territory lost in Balkan war of 1913 and the World War. Other production figures based on estimate of the number of sheep in the territory.

[9] Exports of sheeps' wool only.

[10] Official estimate according to revised method of estimating wool production in Australia, obtained from Quarterly Summary of Australian Statistics, June, 1926, and also reported by the Australian correspondent of the Manchester Guardian, Sept. 23, 1926, p. 397. In 1924, for which year both estimates are available, this is an increase of 5 per cent over figure obtained by old method.

[11] Estimates furnished by Austrailan correspondent to the Manchester Guardian, Sept. 23, 1926, p. 397, who states that they are reliable estimates obtained from official sources and based on new method of estimating. In his statement they are compared with the revised 1924 figure as officially published. Losses in Queensland are taken into account in making 1926 estimate.

[12] These totals include revised estimates for Australia according to new method of making estimates of wool production. The revision in Australia in 1924 increased production for that year 5 per cent. If the figures for previous years were raised 5 per cent, then 36,000,000 pounds would be added to the 1909–1913 average and 30,000,000 to 1923.

Table 452.—*Stocks of wool, tops, and noils held by dealers and manufacturers in United States, 1920–1926*

[Thousand pounds—i. e., 000 omitted]

Date	Held by dealers					Held by manufacturers				
	Grease	Scoured	Pulled	Tops	Noils	Grease	Scoured	Pulled	Tops	Noils
1920										
Jan. 1	152,003	24,030	17,907	4,735	3,893	152,089	20,030	6,302	13,875	7,316
Apr. 1	123,247	26,279	17,710	3,046	4,305	139,333	24,412	9,339	14,328	8,670
July 1	144,837	27,963	15,297	4,487	6,041	112,434	23,078	6,762	15,439	9,002
Oct. 1	179,376	29,988	11,229	5,564	4,754	79,762	15,612	7,593	15,839	9,124
1921										
Jan. 1	188,822	27,814	14,352	6,616	5,434	119,766	17,291	6,895	18,851	9,991
Apr. 1	194,891	22,807	15,506	7,623	3,690	165,398	18,442	11,290	19,325	9,316
July 1	176,584	19,705	12,127	4,883	4,139	164,713	18,042	10,787	20,247	8,101
Oct. 1	181,574	19,480	11,201	4,005	3,009	180,727	19,736	10,484	23,184	7,463
1922 [1]										
Jan. 1	102,384	13,468	9,222	2,866	2,453	171,597	21,097	9,312	17,536	7,136
Apr. 1	70,415	10,995	6,969	2,296	1,373	171,026	25,406	10,419	18,029	7,176
July 1	156,523	13,447	6,988	2,627	1,619	165,810	22,201	9,642	20,720	6,709
Oct. 1	176,377	16,521	7,334	3,827	2,695	191,351	20,336	8,686	19,227	5,904
1923 [1]										
Jan. 1	134,644	22,150	11,106	3,658	6,158	193,492	20,596	8,824	20,211	7,644
Apr. 1	126,158	24,734	13,503	3,378	6,378	175,422	21,787	11,930	18,402	8,247
July 1	186,729	21,075	13,126	5,125	5,977	161,435	18,464	11,148	16,579	8,364
Oct. 1	175,843	21,679	10,531	3,186	5,675	130,935	15,992	8,969	16,998	7,511
1924 [1]										
Jan. 1	144,014	16,665	7,700	2,988	3,783	121,173	16,947	8,971	16,543	7,206
Apr. 1	100,846	16,239	9,561	4,172	1,806	124,345	15,310	7,069	17,141	6,828
July 1	154,931	12,849	8,829	4,461	983	126,985	13,987	6,140	16,323	5,659
Oct. 1	132,953	12,544	7,475	3,869	1,994	129,330	15,165	6,747	16,562	4,867
1925 [1]										
Jan. 1	98,712	18,380	9,799	3,285	2,583	113,026	15,315	7,368	16,258	6,7.9
Apr. 1	65,912	16,819	12,624	2,754	2,412	95,122	15,437	7,025	15,921	6,020
July 1	147,654	15,039	11,267	2,571	3,292	95,021	16,455	7,381	15,252	5,463
Oct. 1	136,043	15,809	9,715	2,240	2,704	102,261	13,621	6,623	15,880	6,207
1926 [1]										
Jan. 1	117,726	14,658	10,552	2,428	2,407	97,162	12,066	7,852	15,346	6,121
Apr. 1	97,552	15,053	12,360	2,692	2,641	95,102	14,358	7,468	15,188	6,184
July 1	182,685	12,204	10,141	2,438	3,090	91,852	12,640	6,877	14,104	5,633
Oct. 1	166,380	12,810	8,709	2,310	2,769	90,992	12,407	6,376	13,771	5,047

Division of Statistical and Historical Research. Compiled from Wool Stock Reports issued quarterly by the Bureau of Agricultural Economics and the Bureau of the Census. Stocks held by the Government are not included.

[1] Figures do not include estimates for firms not reporting.

TABLE 453.—*Wool: Consumption in United States, by classes, 1918–1926*

[Thousand pounds—i. e., 000 omitted]

Year	Combing		Clothing		Carpet		Total	
	Domestic	Foreign	Domestic	Foreign	Foreign combing	Foreign filling	Domestic	Foreign
GREASE								
Av. 1921-1925	153, 843	108, 108	19, 094	6, 329	52, 977	52, 851	172, 937	220, 264
1918	164, 878	217, 571	17, 845	17, 550	16, 414	15, 703	182, 723	267, 038
1919	192, 936	172, 346	20, 995	11, 869	24, 672	28, 747	203, 931	237, 634
1920	134, 824	172, 546	17, 914	11, 997	28, 356	28, 364	152, 738	241, 263
1921	159, 340	117, 704	20, 243	11, 134	22, 968	27, 291	179, 583	179, 097
1922	210, 142	87, 061	26, 750	8, 344	58, 797	51, 664	236, 892	205, 866
1923	111, 494	169, 540	17, 487	7, 072	72, 231	63, 215	128, 981	312, 058
1924	152, 960	81, 635	15, 483	3, 508	51, 042	60, 047	168, 443	199, 232
1925	135, 278	84. 598	15, 506	1, 586	56. 848	62, 037	150, 784	205, 069
1926	126, 563	99, 741	15, 746	1, 633	45, 604	56, 208	142, 309	203, 186
SCOURED								
Av. 1921-1925	6, 939	3, 335	41, 224	17, 630	860	4, 137	48, 163	25, 962
1918	11, 033	16, 623	30, 466	64, 846	1, 177	2, 777	41, 499	85, 423
1919	5, 767	4, 520	30, 902	28, 662	1, 279	4, 407	36, 669	38, 868
1920	5, 906	5, 492	30. 263	22, 828	1, 359	5, 643	36, 169	35, 322
1921	7, 074	3, 040	34, 630	18, 236	630	4, 147	41, 704	26, 053
1922	8, 374	2, 753	47, 547	19, 347	1, 285	5, 410	55, 921	28, 795
1923	7, 051	3, 774	42, 506	21, 909	1, 010	4, 914	49, 557	31, 607
1924	5, 804	3, 409	40, 718	16, 089	533	3, 122	46, 522	23, 153
1925	6, 393	3, 698	40, 720	12, 568	843	3, 091	47, 113	20, 200
1926	5, 189	3, 650	37, 435	10, 509	501	3, 743	42, 624	18, 463
PULLED								
Av. 1921-1925	7, 825	1, 288	9, 518	1, 351	1, 940	4, 570	17, 373	9, 149
1918	9, 977	2, 685	8, 497	2, 918	179	1, 277	18, 474	7, 059
1919	9, 707	537	8, 809	944	321	2, 224	18, 516	4, 026
1920	7, 514	675	6, 116	714	420	2, 499	13, 630	4, 308
1921	9, 445	1, 125	11, 024	1, 052	1, 149	2, 680	20, 469	6, 006
1922	9, 609	960	9, 840	1, 485	2, 264	3, 415	19, 449	8, 124
1923	8, 052	1, 923	8, 315	2, 080	2, 834	5, 409	16, 367	12, 296
1924	5, 852	703	9, 492	1, 241	1, 052	4, 707	15, 344	7, 703
1925	6, 165	1, 728	9, 071	895	2, 351	6, 640	15, 236	11, 614
1926	7, 393	2, 449	8, 339	680	3, 752	9, 163	15, 732	16, 044

Division of Statistical and Historical Research. Compiled from Wool Consumption Reports issued monthly by the Bureau of Agricultural Economics, January, 1918–April, 1922; and by the Bureau of the Census, May, 1922–December, 1926.

TABLE 454.—*Wool: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Algeria	2,445	19,871	4,007	21,541	2,801	19,485	2,906	20,930
Argentina	214	328,204	381	297,618	195	269,848	194	249,777
Australia	324	676,679	[1] 6,389	724,981	[1] 2,946	559,396	[2] 1,784	673,174
Brazil	[3] 511	[3] 2,959	[2] 1,249	4,765	[2] 723	7,377	5,445	4,982
British India	23,721	56,496	23,854	37,719	28,062	51,458	[4] 6,600	[4] 49,775
Chile	1,247	28,223	228	23,064	306	27,382	----------	27,238
China	----------	42,684	----------	56,562	309	74,206	859	67,323
Greece	281	294	613	749	1,387	1,241	----------	----------
Hungary	----------	----------	1,180	7,973	1,624	11,333	1,174	14,714
Irish Free State	----------	----------	----------	----------	1,347	15,566	1,331	10,051
Morocco	----------	8,607	----------	14,540	----------	15,594	----------	13,245
New Zealand	168	194,801	213	217,566	55	206,190	116	205,727
Persia	[5] 2,753	10,023	1,743	8,023	2,846	12,272	----------	----------
Peru	[5] 3	9,333	51	11,087	----------	13,861	----------	10,563
Spain	2,446	28,505	3,104	14,214	2,358	17,565	2,795	6,518
Union of South Africa	7	164,633	201	179,175	70	188,261	156	220,176
Uruguay	----------	139,178	----------	96,951	----------	96,087	----------	89,442
PRINCIPAL IMPORTING COUNTRIES								
Austria	----------	----------	19,084	1,894	15,734	1,722	14,118	1,513
Austria-Hungary	63,942	9,622	----------	----------	----------	----------	----------	----------
Belgium	300,367	196,440	169,775	57,598	161,174	56,026	99,788	24,122
Bulgaria	[3] 1,485	[3] 117	5,441	(6)	3,206	(6)	2,961	[2] 1
Canada	7,794	1,323	21,099	6,318	15,389	6,320	13,561	6,351
Czechoslovakia	----------	----------	33,234	3,786	67,510	8,204	62,427	7,648
Denmark	2,337	1,124	3,357	342	2,444	582	1,706	285
Finland	1,794	30	3,093	[2] 54	3,311	[2] 7	1,748	[2] 56
France	601,628	84,973	579,280	46,062	493,756	38,631	539,904	34,918
Germany	481,988	42,817	293,667	19,264	326,274	25,529	299,253	19,285
Italy	30,145	3,933	77,188	5,208	78,319	6,026	77,016	5,304
Japan	17,921	----------	69,455	----------	70,744	----------	82,322	----------
Netherlands	31,991	26,362	12,573	4,665	12,557	2,727	8,274	1,819
Norway	3,644	123	3,453	534	2,725	717	1,913	368
Poland	----------	----------	42,325	835	36,308	2,680	23,939	2,219
Rumania	2,473	3,538	4,876	4	1,113	161	970	638
Russia	106,184	32,406	[2] 18,237	108	[2] 36,235	[2] 3,478	[2] 41,277	[2] 12,069
Sweden	7,267	149	11,447	265	10,625	276	11,326	158
Switzerland	11,211	338	15,694	186	14,227	161	14,867	59
United Kingdom	506,157	41,164	360,831	57,821	435,738	52,314	414,172	53,775
United States	203,298	[7] 46	394,250	535	268,213	309	339,253	273
Yugoslavia	----------	----------	11,986	[2] 313	10,051	[2] 116	[2] 4,209	[2] 29
Other countries	6,509	35,047	7,355	34,164	8,108	35,528	8,973	23,029
Total	2,422,255	2,190,042	2,200,913	1,956,784	2,118,790	1,828,636	2,087,337	1,857,554

Division of Statistical and Historical Research. Official sources except where otherwise noted.

"Wool" in this table includes washed, unwashed, scoured, pulled wool, slipe, and all other animal fibers included in the United States classification of wool. The following items have been considered as not within this classification: Carded, combed, dyed wool, flocks; sheep, lamb, and goat skins with hair on, mill waste, noils, and tops.

[1] Year beginning July 1.
[2] International Yearbook of Agricultural Statistics.
[3] Four-year average.
[4] Sea trade only.
[5] Three-year average.
[6] Less than 500 pounds.
[7] One year only.

TABLE 455.—*Wool (unwashed): Estimated price per pound, received by producers United States, 1910–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Weighted average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1910–1913	19.2	19.2	19.2	18.2	17.9	17.3	17.8	17.5	17.0	16.9	16.9	17.0	17.6
1914–1920	38.6	36.2	37.8	37.2	38.2	38.2	37.8	37.7	37.4	37.2	36.9	37.2	37.6
1921–1925	30.5	31.6	32.5	32.2	32.2	32.3	32.0	31.1	31.5	31.9	32.6	34.0	32.1
1910	24.5	24.6	24.9	22.3	22.8	19.5	19.0	19.5	17.7	18.1	17.9	17.8	20.5
1911	17.8	17.3	16.8	15.7	14.7	15.5	15.4	16.0	15.6	15.5	15.6	15.5	15.6
1912	16.2	16.3	16.9	17.3	17.8	18.7	18.9	18.8	18.7	18.5	18.6	18.6	18.1
1913	18.6	18.7	18.4	17.7	16.3	15.6	15.9	15.8	15.8	15.5	15.6	16.1	16.4
1914	15.7	15.7	16.4	16.8	17.2	18.4	18.5	18.7	18.6	18.0	18.1	18.6	17.7
1915	18.6	20.2	22.8	22.7	22.0	23.7	24.2	23.8	23.3	22.7	22.7	23.3	22.8
1916	23.3	24.2	25.9	26.3	28.0	28.7	28.6	29.0	28.4	28.7	29.4	30.8	27.9
1917	31.8	32.7	36.7	38.8	43.7	49.8	54.8	54.8	54.2	55.5	55.9	58.2	47.8
1918	58.1	57.1	60.0	60.0	58.2	57.4	57.5	57.4	57.7	57.7	[illegible]	56.2	57.9
1919	55.2	51.1	51.3	47.9	48.0	50.5	51.8	52.2	51.3	50.6	51.0	51.6	50.3
1920	53.3	52.5	51.5	51.3	50.3	38.6	29.5	28.3	28.0	27.5	24.9	21.9	39.1
1921	19.6	19.8	18.9	17.9	16.0	15.4	15.5	15.4	15.5	15.8	15.6	16.9	16.4
1922	18.0	22.3	25.0	24.8	29.0	32.8	32.5	31.6	31.6	32.2	33.2	35.3	29.8
1923	35.3	35.3	37.3	39.2	41.7	41.5	38.3	37.0	37.1	36.9	36.4	36.2	38.9
1924	36.6	37.5	38.2	38.4	37.4	36.0	34.3	33.5	35.5	37.3	40.1	42.2	36.9
1925	42.8	43.2	43.0	40.8	36.9	35.7	39.4	38.1	37.8	37.2	37.8	39.5	38.5
1926	38.9	37.7	34.7	33.2	32.0	31.4	31.9	31.9	32.6	31.6	31.6	30.1	32.5

Division of Crop and Livestock Estimates.

TABLE 456.—*Wool, Territory, fine staple, scoured: Average price per pound, Boston market, 1910–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1914–1920	1.20	1.24	1.26	1.27	1.27	1.31	1.31	1.30	1.28	1.29	1.26	1.27	1.27
1921–1925	1.26	1.30	1.28	1.25	1.25	1.25	1.26	1.23	1.23	1.25	1.29	1.32	1.27
1910	.74	.73	.71	.68	.63	.61	.61	.62	.62	.63	.63	.63	.65
1911	.61	.59	.54	.53	.52	.52	.55	.56	.59	.60	.61	.61	.57
1912	.61	.61	.61	.61	.61	.61	.63	.68	.68	.68	.67	.67	.64
1913	.66	.64	.59	.56	.55	.54	.54	.54	.54	.53	.53	.52	.56
1914	.52	.56	.57	.59	.60	.61	.61	.63	.61	.59	.61	.61	.59
1915	.63	.73	.73	.71	.69	.71	.71	.71	.71	.71	.71	.73	.71
1916	.74	.77	.77	.79	.79	.81	.82	.85	.89	.89	.97	1.05	.84
1917	1.13	1.23	1.28	1.33	1.38	1.74	1.74	1.78	1.81	1.80	1.80	1.80	1.57
1918	1.80	1.80	1.83	1.85	1.80	1.80	1.85	1.80	1.80	1.85	1.80	1.80	1.82
1919	1.60	1.52	1.58	1.65	1.65	1.75	1.85	1.85	1.85	2.00	2.00	2.00	1.78
1920 [1]	2.00	2.05	2.05	2.00	2.00	1.75	1.60	1.45	1.30	1.20	.95	.90	1.60
1921	.84	.90	.89	.88	.86	.82	.82	.82	.82	.82	.84	.88	.85
1922	.97	1.10	1.10	1.09	1.27	1.34	1.35	1.31	1.30	1.34	1.39	1.40	1.25
1923	1.43	1.44	1.44	1.49	1.53	1.50	1.44	1.37	1.32	1.30	1.30	1.34	1.41
1924	1.37	1.41	1.41	1.36	1.33	1.28	1.30	1.36	1.44	1.48	1.60	1.68	1.42
1925	1.67	1.65	1.58	1.42	1.24	1.31	1.37	1.31	1.28	1.32	1.32	1.30	1.40
1926	1.28	1.26	1.21	1.15	1.13	1.10	1.14	1.11	1.11	1.12	1.12	1.08	1.15

Division of Statistical and Historical Research. 1910–1920 data from quarterly reports of the National Association of Wool Manufacturers. 1921–1924 data from Boston Commercial Bulletin, average of weekly range.

[1] Prices June–December, 1920, largely nominal.

TABLE 457.—*Wool, Territory, three-eighths blood combing, scoured: Average wholesale price per pound on Boston market, 1910–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1914–1920	96	98	90	98	99	100	----	----	----	----	----	----
1921–1925	91	95	95	91	89	89	89	91	92	93	98	101
1910	69	61	60	57	56	56	56	57	57	56	54	53
1911	54	54	52	49	49	50	50	52	52	48	46	48
1912	51	52	51	51	51	52	58	58	58	58	58	58
1913	58	58	55	50	49	48	48	48	48	47	46	45
1914	43	47	47	47	50	52	52	49	48	49	51	53
1915	56	63	66	66	66	66	66	68	68	68	67	69
1916	70	71	71	71	72	74	76	78	79	80	87	90
1917	91	100	102	110	118	132	132	138	146	148	148	148
1918	148	149	152	152	142	142	(1)	(1)	(1)	(1)	(1)	(1)
1919	126	121	121	110	118	120	128	137	138	127	130	135
1920	135	135	131	130	125	112	99	95	88	74	65	56
1921	53	55	55	54	53	50	51	52	52	52	54	58
1922	63	76	77	74	83	88	88	90	92	95	99	98
1923	100	103	105	107	111	111	109	105	103	101	104	108
1924	109	112	112	109	105	96	97	107	113	117	124	132
1925	132	131	125	110	92	100	102	102	102	102	110	109
1926	105	99	93	88	87	86	88	90	90	92	92	90

Division of Statistical and Historical Research. Compiled from weekly quotations in Boston Commercial Bulletin.

[1] Not reported. Prices fixed by Government.

TABLE 458.—*Wool, Ohio, Pennsylvania, and West Virginia, 3/8 blood—unwashed: Average price per pound, Boston market, 1900–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1904–1908	31	31	31	30	30	31	31	31	31	31	32	32	31
1909–1913	31	31	30	30	28	28	28	29	29	29	29	29	29
1914–1920	52	52	52	51	51	52	54	53	53	52	52	53	53
1921–1925	50	51	50	48	47	47	47	47	48	49	51	54	49
1900	29	28	27	27	26	25	25	24	24	24	23	24	26
1901	24	23	23	23	22	20	20	20	21	21	21	22	22
1902	22	22	22	22	22	22	22	22	22	23	23	24	22
1903	25	25	25	23	23	24	24	24	26	26	26	26	25
1904	25	26	26	26	26	28	28	28	29	29	31	32	28
1905	32	31	30	31	35	36	36	35	35	35	35	34	34
1906	34	33	33	33	33	33	33	33	33	34	34	34	33
1907	34	34	34	33	32	32	32	33	33	33	31	30	33
1908	31	31	30	29	25	26	25	25	26	26	27	28	27
1909	29	30	31	33	34	35	36	36	37	37	37	37	34
1910	37	37	36	34	31	28	28	28	28	29	29	29	31
1911	29	28	27	26	24	24	25	25	25	25	26	26	26
1912	27	28	28	28	28	28	29	30	31	31	31	31	29
1913	31	31	30	27	24	24	24	24	24	24	23	23	26
1914	23	23	24	24	26	27	28	28	27	27	29	30	26
1915	31	37	38	35	35	35	37	38	37	37	37	38	36
1916	39	40	40	40	40	40	41	42	42	41	44	49	42
1917	48	53	54	57	61	71	75	75	77	75	76	76	67
1918	77	77	80	78	76	76	78	76	76	78	76	76	77
1919	75	66	60	60	60	62	72	70	70	67	68	70	67
1920 [1]	70	70	70	66	61	54	50	45	43	40	32	30	53
1921	29	30	30	30	29	28	27	26	26	27	28	32	28
1922	37	41	41	39	43	48	47	47	48	50	54	54	46
1923	56	58	57	58	58	58	57	56	54	54	54	56	56
1924	56	58	58	57	53	49	50	54	58	61	64	71	57
1925	71	70	65	57	50	54	56	54	52	54	57	56	58
1926	56	54	50	47	45	45	45	45	46	47	47	47	48

Division of Statistical and Historical Research. 1900–1920, from quarterly reports of the National Association of Wool Manufacturers; 1921–1926, from Boston Commercial Bulletin, average of weekly range.

[1] Prices June to December, 1920, are largely nominal.

TABLE 459.—*Wool (Australian scoured): Average yearly price per pound at London, New South Wales wool, 1890–1916*

Year	Price	Year	Price	Year	Price	Year	Price
	Cents		*Cents*		*Cents*		*Cents*
1890	34.70	1897	28.12	1904	38.67	1911	41.99
1891	33.29	1898	30.73	1905	41.21	1912	44.12
1892	30.09	1899	36.94	1906	41.35	1913	48.14
1893	28.79	1900	37.01	1907	44.34	1914	47.40
1894	26.11	1901	28.79	1908	37.59	1915	50.25
1895	25.85	1902	30.00	1909	40.82	1916	70.63
1896	29.61	1903	39.75	1910	43.41		

Division of Statistical and Historical Research. Compiled from weekly quotations of the London Economist. Period of Government price control omitted. Converted at par prior to 1913; other dates converted to cents per pound on the basis of the monthly average rate of exchange as given in Federal Reserve Bulletin.

TABLE 460.—*Wool (Australian scoured): Average monthly price per pound at London, Queensland superior combing wool, 1921–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1921	------	------	------	------	------	------	------	51.75	52.75	58.73	60.69	58.87	------
1922	66.90	74.07	73.38	74.65	79.19	79.76	79.66	79.98	83.81	88.30	93.33	99.87	81.08
1923	101.82	102.61	100.18	99.06	102.20	101.92	103.13	102.61	107.49	107.44	102.26	103.36	102.84
1924	102.47	113.53	113.34	117.85	118.11	116.09	116.54	121.39	127.31	129.47	134.40	136.95	120.62
1925	138.26	128.76	122.40	119.38	111.25	111.38	108.32	107.26	107.03	107.75	109.04	104.08	114.58
1926	99.35	88.21	89.23	91.25	91.25	91.25	91.25	91.25	92.78	93.68	91.25	91.25	91.83

Division of Statistical and Historical Research. Compiled from weekly quotations of the London Economist. Converted at par for 1926; other dates converted to cents per pound on the basis of the monthly average rate of exchange as given in Federal Reserve Bulletins.

TABLE 461.—*Livestock: Receipts, local slaughter, and stocker and feeder shipments at all public stockyards in United States, 1915–1926*

[Thousands—i. e., 000 omitted]

Year	Cattle			Hogs			Sheep		
	Receipts	Local slaughter	Stocker and feeder shipments	Receipts	Local slaughter	Stocker and feeder shipments	Receipts	Local slaughter	Stocker and feeder shipments
1915	14,553	7,912	(1)	36,213	24,893	(1)	18,435	10,254	(1)
1916	17,676	10,294	3,847	43,265	30,984	194	20,692	11,228	3,277
1917	23,066	13,275	4,803	38,042	25,440	788	20,216	9,142	4,448
1918	25,295	14,874	5,013	44,863	30,441	989	22,485	10,266	5,208
1919	24,624	13,633	5,286	44,469	30,018	902	27,256	12,646	6,956
1920	22,197	12,194	4,102	42,121	26,761	728	23,538	10,981	5,180
1921	19,737	11,078	3,504	41,101	26,335	499	24,168	12,858	3,095
1922	23,217	12,435	4,929	44,067	28,737	593	22,364	10,609	4,167
1923	23,211	13,030	4,553	55,330	36,172	820	22,025	10,271	4,478
1924	23,695	13,850	3,966	55,414	35,188	497	22,201	10,399	4,679
1925	24,067	14,462	3,823	43,929	27,665	532	22,100	10,399	4,332
1926	23,872	14,350	3,712	39,772	24,580	917	23,868	11,387	4,623

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool. Local slaughter represents number driven out from public stockyards for local slaughter.

[1] Complete information for 1915 and 1916, particularly on disposition of stock, is not obtainable from many markets.

TABLE 462.—*Livestock slaughter statistics: Sources of supply, classification slaughter costs, weights, and yields, 1926* [1]

CATTLE

Month	Medium of obtaining supply: Stock-yards	Medium of obtaining supply: Other sources	Sex classification: Bulls and stags	Sex classification: Cows and heifers	Sex classification: Steers	Average live cost per 100 pounds	Average live weight	Dressed weight as percentage of live weight	By-product yield (on basis of live weight): Edible fat [2]	By-product yield: Edible offal	By-product yield: Hides
1926	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Dollars*	*Pounds*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
January	91.31	8.69	3.25	54.83	41.92	7.17	967.25	52.96	3.90	3.03	6.87
February	90.76	9.24	3.09	51.00	45.91	7.39	971.03	53.82	4.12	3.10	6.82
March	88.69	11.31	3.06	49.17	47.77	7.67	972.83	54.14	4.24	3.05	6.78
April	90.14	9.86	2.91	43.91	53.18	7.73	974.61	55.28	4.49	3.00	6.71
May	89.12	10.88	4.10	42.38	53.52	7.69	965.65	55.04	4.39	3.00	6.69
June	88.12	11.88	4.71	43.90	51.39	7.83	965.97	54.89	4.31	3.08	6.67
July	89.67	10.33	3.46	44.76	51.78	7.49	959.44	54.39	4.11	2.99	6.66
August	90.02	9.98	3.42	45.19	51.39	7.26	959.43	54.23	3.85	3.04	6.79
September	89.98	10.02	3.56	49.13	47.31	7.27	957.32	53.46	3.34	3.09	6.81
October	89.91	10.09	3.22	57.99	38.79	6.84	954.21	52.67	3.32	3.08	6.80
November	90.25	9.75	2.96	59.00	38.04	6.65	954.94	52.05	3.31	3.14	6.95
December	89.22	10.78	3.05	52.42	44.53	7.14	972.76	52.93	3.63	3.01	6.97

CALVES

Month	Medium of obtaining supply: Stock-yards	Medium of obtaining supply: Other sources	Average live cost per 100 pounds	Average live weight	Dressed weight as percentage of live weight	By-product yield (on basis of live weight): Edible fat [2]	By-product yield: Edible offal
1926	*Per cent*	*Per cent*	*Dollars*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
January	85.64	14.36	9.93	174.11	60.65	0.76	3.79
February	86.42	13.58	10.29	168.08	58.06	.69	3.84
March	86.57	13.43	10.60	158.04	58.26	.66	3.90
April	87.06	12.94	9.30	153.79	60.05	.62	3.86
May	84.07	15.93	10.40	160.79	58.28	.65	3.75
June	85.89	14.11	9.98	169.02	58.67	.62	3.77
July	83.92	16.08	9.80	184.98	58.48	.61	3.63
August	84.12	15.88	10.37	194.66	57.95	.67	3.40
September	84.69	15.31	9.91	201.12	58.36	.65	3.41
October	86.09	13.91	9.27	195.11	57.47	.63	3.45
November	85.42	14.58	8.88	186.43	57.74	.70	3.66
December	82.79	17.21	9.49	175.85	58.92	.65	3.59

SWINE

Month	Medium of obtaining supply: Stock-yards	Medium of obtaining supply: Other sources	Sex classification: Sows	Sex classification: Barrows	Sex classification: Stags and boars	Average live cost per 100 pounds	Average live weight	Dressed weight as percentage of live weight	By-product yield (on basis of live weight): Lard (rendered)	By-product yield: Edible offal	By-product yield: Trimmings	By-product yield: Inedible grease (unrendered)
1926	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*Dolls.*	*Lbs.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
January	73.86	26.14	45.29	54.32	0.39	12.05	232.83	76.85	15.85	2.55	4.81	1.26
February	74.36	25.64	45.27	54.24	.49	12.47	234.78	77.16	16.69	2.59	5.27	1.30
March	75.96	24.04	47.14	52.32	.54	12.32	239.08	76.59	17.45	2.64	5.39	1.32
April	75.79	24.21	48.13	51.08	.79	12.40	240.35	76.93	17.05	2.57	5.24	1.56
May	76.59	23.41	50.24	48.90	.86	13.52	238.12	76.55	16.61	2.67	5.08	1.29
June	77.78	22.22	55.67	43.52	.81	14.01	246.08	76.92	16.27	2.63	5.22	1.28
July	75.96	24.04	63.31	35.87	.82	12.64	258.09	76.66	16.22	2.60	5.03	1.31
August	74.64	25.36	63.88	35.37	.75	11.83	258.98	77.18	16.08	2.62	5.65	1.31
September	72.65	27.35	60.26	38.84	.90	12.52	239.67	76.34	15.46	2.84	6.15	1.42
October	70.97	29.03	54.62	44.73	.65	12.78	215.89	75.23	14.16	3.03	6.48	1.37
November	68.40	31.60	49.24	50.31	.45	11.80	212.33	74.56	13.97	2.90	6.29	1.19
December	61.62	38.38	45.21	54.31	.48	11.55	217.48	75.92	14.79	2.71	5.93	1.19

[1] Based on reports from about 750 packers and slaughterers, whose slaughterings equaled nearly 85 per cent of total slaughter under Federal inspection.

[2] Unrendered.

TABLE 462.—*Livestock slaughter statistics: Sources of supply, classification slaughter costs, weights, and yields, 1926*—Continued

SHEEP AND LAMBS

Month	Medium of obtaining supply		Age classification		Average live cost per 100 pounds	Average live weight	Dressed weight as percentage of live weight	By-product yield (on basis of live weight)	
	Stockyards	Other sources	Sheep	Lambs and yearlings				Edible fat	Edible offal
1926	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Dollars*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
January	86.43	13.57	11.64	88.36	14.12	87.39	47.05	3.07	2.28
February	83.16	16.84	6.53	93.47	12.66	88.42	46.95	3.02	2.24
March	78.61	21.39	4.77	95.23	12.46	87.17	47.03	2.94	2.13
April	79.73	20.27	8.00	92.00	13.14	84.77	47.87	3.14	2.39
May	78.42	21.58	18.93	81.07	13.60	79.05	48.50	2.61	2.31
June	85.08	14.92	12.04	87.96	13.86	75.18	49.04	2.19	2.57
July	86.30	13.70	8.31	91.69	12.75	75.59	[illegible]8.23	2.26	2.37
August	87.97	12.03	7.69	92.31	12.79	76.75	48.04	2.31	2.21
September	86.65	13.35	11.11	88.89	12.71	77.41	48.18	2.51	2.26
October	86.32	13.68	9.36	90.64	12.51	79.36	47.45	2.57	2.38
November	88.38	11.62	9.49	90.51	11.97	81.71	46.89	2.63	2.57
December	87.28	12.72	8.46	91.54	11.81	82.99	46.70	2.66	2.49

Division of Statistical and Historical Research. Compiled from reports of the Cold Storage Reports Section.

TABLE 463.—*Livestock: Number of animals slaughtered at Federal-inspected plants, 1907–1926*

Year ending June 30—	Cattle	Calves	Sheep	Goats	Swine	Horses	Total
1907	7,621,717	1,763,574	9,681,876	52,149	31,815,900		50,935,216
1908	7,116,275	1,995,487	9,702,545	45,953	35,113,077		53,973,337
1909	7,325,337	2,046,711	10,802,903	69,198	35,427,931		55,672,075
1910	7,962,189	2,295,099	11,149,937	115,811	27,656,021		49,179,057
1911	7,781,030	2,219,908	13,005,502	54,145	29,916,363		52,976,948
1912	7,532,005	2,212,929	14,208,724	63,983	34,966,378		59,014,019
1913	7,155,839	2,098,484	14,724,465	56,556	32,287,538		56,322,882
1914	6,724,117	1,814,904	14,958,834	121,827	33,289,705		56,909,387
1915	6,964,502	1,735,902	12,909,089	165,533	36,247,858		58,022,884
1916	7,404,288	2,048,022	11,985,926	180,356	40,482,799		62,101,391
1917	9,299,489	2,679,745	11,343,418	174,649	40,210,847		63,708,148
1918	10,938,287	3,323,077	8,769,498	149,503	35,449,247		58,629,612
1919	11,241,991	3,674,227	11,268,370	125,660	44,398,389		70,708,637
1920	9,709,819	4,227,558	12,334,827	77,270	38,981,914	1,089	65,332,477
1921	8,179,572	3,896,207	12,452,435	20,027	37,702,866	1,335	62,252,442
1922	7,871,457	3,924,255	11,968,434	13,758	39,416,439	1,898	63,196,241
1923	9,029,536	4,337,780	11,403,703	25,129	48,600,069	1,459	73,397,676
1924	9,188,652	4,667,948	11,505,001	31,279	54,416,481	4,699	79,814,060
1925	9,773,883	5,185,316	12,203,159	26,570	48,459,608	11,909	75,660,445
1926	10,098,121	5,311,774	12,354,225	42,774	40,442,730	39,668	68,289,292

Bureau of Animal Industry.

TABLE 464.—*Meat and meat products[1] prepared under Federal inspection, 1907–1926*

[Thousand pounds—i. e., 000 omitted]

Year ending June 30—	Pork placed in cure	Sausage chopped	Canned meats	Lard	Lard compounds and substitutes	Oleo products	Oleomargarine	All other products	Total
1907	2, 248, 886	267, 760	105, 196	1, 003, 602	353, 549	283, 971	55, 694	145, 554	4, 464, 213
1908	2, 875, 997	416, 290	92, 582	1, 433, 778	436, 448	293, 425	79, 380	330, 487	5, 958, 298
1909	2, 686, 051	457, 095	123, 810	1, 308, 986	488, 249	295, 889	91, 068	1, 340, 280	6, 791, 437
1910	2, 216, 680	485, 864	127, 263	948, 468	671, 526	296, 429	139, 158	1, 338, 576	6, 223, 964
1911	2, 568, 149	488, 814	144, 942	1, 185, 503	672, 845	330, 688	117, 848	1, 425, 444	6, 934, 233
1912	2, 633, 752	523, 893	153, 871	1, 309, 140	648, 443	297, 038	128, 319	1, 585, 103	7, 279, 559
1913	2, 545, 358	531, 626	115, 237	1, 222, 857	670, 802	264, 705	145, 356	1, 598, 869	7, 094, 810
1914	2, 568, 335	542, 017	120, 473	1, 187, 963	590, 409	274, 625	148, 999	1, 605, 475	7, 033, 296
1915	2, 913, 328	502, 675	235, 963	1, 277, 734	520, 899	273, 049	145, 981	1, 663, 491	7, 533, 070
1916	2, 922, 381	565, 047	164, 200	1, 277, 870	397, 089	287, 047	152, 388	1, 708, 972	7, 474, 994
1917	2, 918, 211	635, 860	283, 319	1, 119, 315	466, 198	279, 197	225, 074	1, 736, 459	7, 663, 633
1918	3, 132, 549	624, 827	468, 633	943, 851	453, 164	263, 630	265, 335	1, 743, 196	7, 905, 185
1919	3, 717, 838	667, 602	632, 259	1, 256, 043	469, 732	266, 808	251, 170	1, 907, 590	9, 169, 042
1920	2, 903, 854	682, 521	211, 521	1, 316, 918	328, 567	364, 992	217, 561	1, 749, 224	7, 755, 158
1921	2, 501, 885	583, 777	86, 240	1, 487, 820	339, 366	253, 397	151, 638	1, 723, 697	7, 127, 820
1922	2, 725, 031	568, 626	109, 481	1, 659, 331	312, 014	238, 034	118, 197	1, 666, 402	7, 427, 116
1923	3, 366, 258	679, 315	160, 132	2, 017, 939	336, 843	278, 137	129, 767	1, 920, 156	8, 888, 547
1924	3, 502, 368	707, 323	183, 026	2, 110, 660	363, 320	259, 008	142, 881	2, 136, 254	9, 404, 840
1925	3, 176, 714	736, 877	214, 330	1, 733, 933	458, 518	287, 271	133, 836	2, 170, 598	8, 912, 077
1926	2, 850, 622	771, 655	214, 167	1, 598, 754	543, 913	275, 636	148, 331	2, 008, 004	8, 411, 082

Bureau of Animal Industry.

[1] The above figures do not represent production, as a product may be inspected more than once in course of further manufacture.

TABLE 465.—*Meats and lard: Consumption, 1907–1926*

Year	Consumption								Percentage of total consumption					
	Beef	Veal	Total beef and veal	Lamb and mutton	Pork	Total meats (1)	Lard	Total meats and lard	Beef	Veal	Total beef and veal	Lamb and mutton	Pork	Total meats
	Million lbs.	*Million lbs.*	*Million lbs.*	*Million lbs.*	*Million lbs.*	*Million lbs.*	*Million lbs.*	*Million lbs.*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Average:														
1909–1913	6, 279	636	6, 915	685	5, 744	13, 344	1, 065	14, 409	47. 0	4. 8	51. 8	5. 1	43. 1	100
1914–1920	6, 081	636	6, 717	588	5, 854	13, 158	1, 303	14, 461	46. 2	4. 8	51. 0	4. 5	44. 5	100
1921–1925	6, 765	872	7, 636	589	7, 745	15, 971	1, 552	17, 522	42. 3	5. 5	47. 8	3. 7	48. 5	100
1907	6, 780	644	7, 424	558	5, 917	13, 899	1, 055	14, 954	48. 8	4. 6	53. 4	4. 0	42. 6	100
1908	6, 367	627	6, 994	557	6, 235	13. 786	1, 154	14, 940	46. 2	4. 5	50. 7	4. 1	45. 2	100
1909	6, 835	683	7, 518	601	5, 455	13, 574	1, 042	14, 616	50. 4	5. 0	55. 4	4. 4	40. 2	100
1910	6, 561	686	7, 247	596	5, 267	13, 110	1, 052	14. 162	50. 1	5. 2	55. 3	4. 5	40. 2	100
1911	6, 342	656	6, 998	729	6, 046	13, 773	1, 063	14, 836	46. 0	4. 8	50. 8	5. 3	43. 9	100
1912	5, 807	667	6, 474	773	5, 873	13, 120	1, 068	14, 188	44. 2	5. 1	49. 3	5. 9	44. 8	100
1913	5, 852	487	6, 339	725	6, 077	13, 141	1. 100	14, 241	44. 5	3. 7	48. 2	5. 5	46. 3	100
1914	5, 722	437	6. 159	724	6, 102	12, 985	1, 192	14, 177	44. 0	3. 4	47. 4	5. 6	47. 0	100
1915	5, 414	428	5, 842	622	5, 908	12, 372	1, 281	13, 653	43. 8	3. 4	47. 2	5. 0	47. 8	100
1916	5, 639	536	6, 175	613	6, 055	12, 843	1, 368	14, 211	43. 9	4. 2	8. 1	4. 8	47. 1	100
1917	6, 083	662	6, 745	473	5, 037	12, 255	1, 195	13, 450	49. 6	5. 4	55. 0	3. 9	41. 1	100
1918	6, 522	765	7, 287	486	5, 684	13, 457	1, 374	14, 831	48. 5	5. 7	54. 2	3. 6	42. 2	100
1919	6, 474	808	7, 282	607	5, 755	13, 644	1. 292	14, 936	47. 5	5. 9	53. 4	4. 4	42. 2	100
1920	6, 713	814	7, 527	588	6, 437	14, 522	1, 416	15, 968	46. 1	5. 6	51. 7	4. 1	44. 2	100
1921	6, 171	751	6, 922	639	6, 886	14, 447	1, 223	15, 670	42. 7	5. 2	47. 9	4. 4	47. 7	100
1922	6, 643	797	7, 440	545	7, 260	15, 245	1, 558	16, 803	43. 6	5. 2	48. 8	3. 6	47. 6	100
1923	6, 850	872	7, 722	576	8, 338	16, 636	1, 707	18, 343	41. 2	5. 2	46. 4	3. 5	50. 1	100
1924	6, 993	935	7, 928	589	8, 492	17, 009	1. 749	18, 758	41. 1	5. 5	46. 6	3. 5	49. 9	100
1925	7, 166	1, 004	8, 170	597	7, 794	16, 516	1, 522	18, 038	43. 4	6. 1	49. 5	3. 6	46. 9	100
1926	7, 429	964	8, 393	641	7, 689	16, 723	1, 584	18, 307	44. 4	5. 8	50. 2	3. 8	46. 0	100

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Quantities based on carcass weight; edible offal not included because of the variable percentage used in edible products. Subject to revision.

[1] Not including goat meat.

TABLE 466.—*Meats and lard: Annual per capita consumption, 1907–1926*

Year	Beef	Veal	Lamb and mutton	Pork, not including lard	Total meat [1]	Lard	Total meats and lard
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Average:							
1909–1913	67. 2	6. 8	7. 3	61. 3	142. 5	11. 4	153. 9
1914–1920	59. 4	6. 2	5. 8	57. 3	128. 7	12. 8	141. 5
1921–1925	60. 4	7. 8	5. 3	69. 3	142. 9	13. 9	156. 7
1907	77. 5	7. 4	6. 4	67. 7	159. 0	12. 1	171. 1
1908	71. 5	7. 0	6. 3	70. 0	154. 8	12. 9	167. 7
1909	75. 4	7. 5	6. 6	60. 1	149. 6	11. 5	161. 1
1910	71. 1	7. 4	6. 4	57. 1	142. 0	11. 4	153. 4
1911	67. 7	7. 0	7. 8	64. 5	147. 0	11. 3	158. 3
1912	61. 1	7. 0	8. 1	61. 8	138. 0	11. 2	149. 2
1913	60. 6	5. 0	7. 5	63. 0	136. 1	11. 4	147. 5
1914	58. 4	4. 4	7. 4	62. 3	132. 5	12. 2	144. 7
1915	54. 5	4. 3	6. 3	59. 5	124. 6	12. 9	137. 5
1916	56. 0	5. 3	6. 1	60. 1	127. 5	13. 6	141. 1
1917	59. 5	6. 5	4. 6	49. 3	119. 9	11. 7	131. 6
1918	63. 0	7. 4	4. 7	54. 8	129. [illegible]	13. 3	143. 2
1919	61. 6	7. 7	5. 8	54. 8	12[illegible]. 9	12. 3	142. 2
1920	63. 1	7. 6	5. 5	60. 5	136. 7	13. 3	150. 0
1921	56. 9	7. 0	5. 9	63. 9	133. 3	11. 3	144. 6
1922	60. 4	7. 3	5. 0	66. 1	138. 8	14. 2	153. 0
1923	61. 3	7. 8	5. 2	74. 7	149. 0	15. 3	164. 3
1924	61. 5	8. 2	5. 2	74. 7	149. 6	15. 4	165. 0
1925	62. 1	8. 7	5. 2	67. 6	143. 6	13. 2	156. 8
1926	63. 4	8. 2	5. 5	65. 7	142. 8	13. 5	156. 3

Bureau of Animal Industry. Quantities based on carcass weight; edible offal not included because of the variable percentage used in edible products. Subject to revision.

[1] Not including goat meat.

TABLE 467.—*Meats, fresh: Supply at eastern markets, by years, 1920–1926*

RECEIPTS

Market and year	Carcasses							Cuts			
	Steers	Cows	Bulls	Veal	Hogs	Lambs	Mutton	Beef	Pork	Veal	Lamb and mutton
	Number	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Boston:											
1920	136, 263	104, 247	3, 950	47, 848	1, 295	661, 132	69, 116	1, 177, 454	9, 657, 306	-------	-------
1921	139, 087	66, 644	3, 762	35, 437	4, 655	684, 763	39, 957	402, 649	15, 139, 954	-------	-------
1922	137, 667	69, 519	3, 074	50, 844	12, 698	563, 743	29, 345	37, 570	12, 179, 662	50, 000	47, 797
1923	133, 115	65, 434	2, 686	53, 659	507	602, 832	34, 989	96, 308	10, 471, 225	7, 000	22, 419
1924	124, 330	73, 811	3, 149	68, 033	636	676, 308	29, 838	292, 097	22, 228, 333	6, 408	25
1925	117, 702	95, 300	2, 247	78, 883	457	673, 177	27, 063	155, 936	24, 574, 620	58, 343	16, 910
1926	143, 862	89, 765	2, 313	75, 298	45	695, 443	35, 468	62, 511	23, 546, 007	-------	16, 100
New York:											
1920	326, 685	54, 578	12, 374	495, 929	21, 057	1, 002, 378	433, 792	4, 068, 457	27, 002, 090	-------	-------
1921	353, 483	41, 966	8, 957	479, 634	12, 024	1, 210, 250	376, 392	5, 405, 865	37, 640, 694	-------	-------
1922	377, 514	34, 103	10, 030	538, 603	37, 863	1, 065, 095	310, 122	6, 362, 381	49, 272, 401	174, 359	159, 187
1923	400, 816	44, 580	27, 703	560, 911	143, 354	1, 079, 634	306, 173	8, 401, 118	63, 877, 800	328, 054	246, 112
1924	414, 797	60, 833	14, 664	605, 614	5, 697	1, 126, 635	263, 781	11, 857, 266	63, 087, 245	2, 276, 074	236, 110
1925	422, 860	52, 259	8, 364	618, 167	1, 478	1, 242, 296	251, 111	13, 481, 444	54, 413, 736	1, 593, 073	123, 723
1926	420, 172	36, 694	5, 503	546, 501	276	1, 251, 156	237, 308	21, 957, 429	59, 588, 663	2, 564, 113	256, 677
Philadelphia:											
1920	114, 308	43, 070	5, 741	92, 954	-------	298, 741	114, 976	-------	16, 228, 004	-------	-------
1921	123, 965	33, 434	5, 307	88, 778	921	391, 813	106, 191	-------	24, 316, 143	-------	-------
1922	135, 747	27, 216	5, 672	87, 531	319	336, 174	85, 843	-------	20, 270, 971	-------	-------
1923	138, 214	29, 036	9, 340	90, 374	-------	330, 351	85, 688	-------	21, 564, 547	-------	-------
1924	145, 148	39, 039	11, 853	108, 539	-------	421, 987	77, 339	-------	23, 314, 220	-------	-------
1925	132, 516	39, 996	10, 660	106, 044	-------	434, 080	67, 276	-------	20, 319, 337	-------	-------
1926	138, 018	44, 675	12, 472	106, 607	-------	500, 539	79, 738	-------	20, 871, 271	-------	-------

TABLE 467.—*Meats, fresh: Supply at eastern markets, by years, 1920–1926*—Con.

SLAUGHTER

Market and year	Under Federal inspection				Under city inspection			
	Cattle	Calves	Hogs	Sheep	Cattle	Calves	Hogs	Sheep
	Number	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*	*Number*
Boston:								
1920	80,027	132,667	945,369	262,061	3,368	30,462	52,021	481
1921	79,014	148,509	759,972	392,062	1,242	16,741	59,139	12
1922	80,791	144,364	825,527	322,102	2,020	14,475	63,450	3
1923	86,387	94,255	1,092,303	335,401	989	23,993	57,729	159
1924	93,861	96,257	933,806	291,004	3,119	27,493	53,644	68
1925	89,439	84,870	700,673	276,281	2,476	27,205	47,854	55
1926	89,689	81,182	630,194	279,775	2,497	20,748	44,382	34
New York:								
1920	547,850	657,362	2,159,549	1,668,942	1,050	99,993	11,689	7,882
1921	497,865	686,747	2,249,705	2,208,495	2,999	123,894	7,941	12,463
1922	524,921	697,974	2,408,377	2,064,775	5,398	116,984	6,691	14,923
1923	511,210	708,206	2,747,346	2,149,317	80	117,289	6,477	12,265
1924	534,048	764,775	3,039,378	2,332,989	1,168	121,897	5,490	12,867
1925	515,515	776,877	2,499,766	2,256,533	552	112,808	4,405	16,947
1926	500,888	781,774	2,245,593	2,458,055	2	113,073	2,361	19,185
Philadelphia:								
1920	104,527	61,240	891,766	229,126	10,221	32,652	23,483	75,545
1921	109,548	63,169	913,573	311,019	10,288	32,890	11,930	86,426
1922	111,396	71,589	921,066	239,079	13,345	45,371	13,928	95,738
1923	106,452	74,649	1,103,304	216,167	11,112	42,331	14,655	88,559
1924	96,267	81,952	1,091,370	186,588	17,212	48,433	15,364	108,197
1925	84,306	81,283	842,190	177,574	20,100	54,707	11,357	106,343
1926	94,298	104,389	865,075	201,106	17,588	36,816	10,951	71,401

SUMMARY

Market and year	Beef		Veal		Pork		Lamb and mutton	
	Carcasses	Cuts	Carcasses	Cuts	Carcasses	Cuts	Carcasses	Cuts
	Number	*Pounds*	*Number*	*Pounds*	*Number*	*Pounds*	*Number*	*Pounds*
Boston:								
1920	327,855	1,177,454	210,977	----------	968,685	9,657,306	992,810	--------
1921	289,749	402,649	200,687	----------	823,766	15,139,954	1,116,794	--------
1922	293,071	37,570	209,683	50,000	901,675	12,179,662	915,193	47,797
1923	288,611	96,308	171,907	7,000	1,150,539	10,471,225	973,381	22,419
1924	298,270	292,697	191,783	6,408	988,085	22,228,333	997,278	25
1925	307,164	155,936	190,958	58,343	748,984	24,574,620	976,576	16,910
1926	328,120	62,511	177,228	----------	674,621	23,546,007	1,010,720	16,100
New York:								
1920	942,537	4,068,457	1,253,284	----------	2,192,295	27,002,090	3,112,994	--------
1921	905,270	5,405,865	1,290,275	----------	2,289,670	37,640,694	3,807,600	--------
1922	951,966	6,362,381	1,353,561	174,359	2,452,931	49,272,401	3,454,915	159,187
1923	984,389	8,401,118	1,386,406	328,054	2,807,177	63,877,800	3,547,389	246,112
1924	1,025,510	11,857,256	1,492,286	2,276,074	3,050,565	63,087,245	3,736,272	236,110
1925	989,550	13,481,444	1,597,352	1,593,073	2,505,649	54,413,736	3,766,887	123,723
1926	963,259	21,957,429	1,441,348	2,564,113	2,248,230	59,538,063	3,965,704	256,677
Philadelphia:								
1920	277,867	----------	186,846	----------	915,249	16,223,004	718,388	--------
1921	282,542	----------	184,837	----------	926,424	24,316,143	895,443	--------
1922	293,376	----------	204,491	----------	953,313	20,270,971	756,834	--------
1923	294,154	----------	207,354	----------	1,117,959	21,564,547	720,765	--------
1924	309,519	----------	238,924	----------	1,106,734	23,314,220	794,111	--------
1925	287,578	----------	242,034	----------	853,547	20,319,337	785,273	--------
1926	307,051	----------	247,812	----------	876,026	20,871,271	842,784	--------

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

TABLE 468.—*Meat and meat products: International trade, average 1911–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1911–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	3, 487	1, 173, 461	542	1, 853, 251	529	2, 406, 974	350	2, 168, 222
Australia	1, 967	507, 143	[1] 11, 222	[1] 212, 406	[1] 5, 760	[1] 458, 134		[1] 308, 325
Brazil	54, 012	1, 520	6, 176	250, 305	14, 438	190, 158		147, 338
Canada	43, 327	60, 242	62, 393	142, 665	33, 099	174, 258	23, 378	206, 455
Chile	11, 738	19, 728	1, 225	30, 078	771	31, 810		38, 120
China	85	64, 684	1, 414	56, 377	2, 992	55, 095	2, 374	55, 941
Denmark	82, 184	368, 188	19, 239	492, 220	18, 522	528, 4[illegible]3	17, 319	554, 353
Hungary			19, 122	21, 996	19, 585	18, 631	5, 196	62, 043
Irish Free State					71, 371	117, 436	77, 524	89, 997
Netherlands	359, 864	497, 402	262, 927	368, 508	281, 613	515, 244	253, 787	553, 773
New Zealand	960	326, 539	832	405, 712	1, 182	425, 445	1, 239	449, 916
Sweden	24, 215	39, 768	39, 797	48, 617	40, 184	58, 122	41, 530	36, 185
Union of South Africa	31, 103	404	16, 753	2, 092	17, 374	18, 810	16, 499	23, 264
United States	18, 719	1, 277, 524	69, 960	2, 342, 809	62, 223	2, 063, 522	62, 943	1, 584, 468
Uruguay	[2] 702	196, 911		456, 041	54	398, 341	77	421, 412
Yugoslavia			437	49, 279	796	42, 467		
PRINCIPAL IMPORTING COUNTRIES								
Austria			165, 474	1, 160	179, 045	2, 647	129, 560	3, 008
Austria-Hungary	49, 268	12, 420						
Belgium	179, 120	127, 057	266, 037	23, 428	319, 660	34, 463	285, 793	66, 705
Cuba	128, 362	([2] [3])	205, 775		232, 838			
Czechoslovakia			161, 940	2, 634	167, 635	2, 722	114, 092	5, 285
Finland	14, 973	2, 081	21, 866	3, 543	20, 171	4, 810	13, 200	8, 078
France	111, 496	98, 281	376, 947	90, 709	498, 729	60, 108	377, 097	55, 999
Germany	559, 752	19, 525	768, 606	15, 988	880, 075	28, 424	982, 581	34, 981
Italy	104, 619	15, 708	146, 178	17, 370	379, 484	11, 315	318, 654	15, 682
Japan	11, 727		70, 228		73, 518		56, 863	
Norway	42, 416	3, 365	69, 349	2, 801	56, 018	2, 102	51, 367	1, 445
Philippine Islands	21, 902		13, 424		16, 421		17, 531	([3])
Poland			34, 908	4, 591	50, 783	18, 278	32, 168	78, 780
Russia	130, 897	53, 175	8, 053	22				
Spain	37, 974	3, 200	23, 085	9, 533	27, 948	11, 380	27, 203	7, 046
Switzerland	60, 174	3, 169	38, 432	2, 886	34, 062	2, 647	27, 639	3, 897
United Kingdom	2, 843, 605	117, 226	3, 909, 650	114, 709	3, 801, 052	143, 423	3, 878, 850	136, 718
Other countries	111, 722	35, 935	184, 279	60, 403	148, 788	78, 290	131, 113	80, 204
All countries:								
Beef	2, 044, 172	2, 162, 336	2, 861, 640	2, 903, 898	3, 149, 106	3, 609, 841	3, 186, 971	3, 323, 744
Mutton	611, 744	560, 284	701, 108	525, 113	622, 431	571, 189	658, 435	624, 331
Pork	1, 632, 382	1, 638, 145	2, 755, 527	2, 802, 127	2, 765, 763	2, 763, 612	2, 256, 701	2, 396, 891
Other	702, 072	663, 891	657, 995	850, 995	919, 420	958, 837	843, 820	852, 854
Total	4, 990, 370	5, 024, 656	6, 976, 270	7, 082, 133	7, 456, 720	7, 903, 479	6, 945, 927	7, 197, 820

Division of Statistical and Historical Research. Official sources.

[1] Year beginning July 1. [2] One year only. [3] Less than 500 pounds.

TABLE 469.—*Meats, fresh and smoked: Average wholesale price per 100 pounds at Chicago and New York, by months, 1926*

CHICAGO

Class of meat	January	February	March	April	May	June	July	August	September	October	November	December	Average
Beef:													
Steer—													
Heavyweight (700 pounds up)—	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Choice	18.55	18.00	17.00	16.25	15.81	16.14	15.70	15.95	16.98	16.54	16.50	16.50	16.66
Good	16.28	15.64	15.15	14.75	14.65	15.14	14.56	14.80	16.17	15.65	15.50	15.50	15.32
Light and medium weight (under 700 pounds)—													
Choice	18.55	17.55	17.96	17.88	16.75	17.10	16.60	16.81	18.46	18.41	18.28	18.91	17.77
Good	16.28	15.38	15.85	16.34	15.29	15.74	15.33	15.38	17.03	16.91	16.78	17.15	16.12
All weights—													
Medium	13.35	13.19	13.42	14.64	13.91	14.14	13.61	13.56	13.44	13.36	13.89	14.16	13.72
Common	12.20	11.82	11.69	12.96	13.24	12.22	11.98	11.90	11.49	11.42	11.78	12.11	12.07
Cow—													
Good	13.40	13.14	13.38	13.88	13.84	13.50	13.18	12.94	13.04	12.50	12.50	13.22	13.21
Medium	11.90	12.05	12.51	12.90	12.59	12.23	11.90	11.56	11.71	11.25	11.41	12.22	12.02
Common	10.55	10.69	11.20	11.65	11.44	10.86	10.50	10.22	10.23	9.75	10.08	11.00	10.68
Veal:													
Vealers—													
Choice	21.55	21.12	20.70	19.80	21.38	20.55	21.00	22.32	23.50	22.48	18.64	19.34	21.03
Good	19.70	19.00	18.40	16.95	19.05	18.51	18.95	20.45	21.12	20.65	17.08	17.36	18.94
Medium	17.25	17.00	16.28	14.42	16.35	16.08	16.68	18.45	19.30	18.90	15.30	15.36	16.78
Common	14.75	14.50	14.36	11.92	14.22	14.38	14.40	16.30	17.40	17.12	13.30	13.40	14.67
Calf carcasses—													
Good							15.40		18.26	16.20	14.22	14.35	
Medium							13.75		15.97	14.00	12.30	12.70	
Common							11.90		13.52	11.92	10.60	10.70	
Lamb and mutton:													
Lamb—													
Light and handy weight (30 to 42 pounds)—													
Choice	28.42	25.40	24.20	27.10	31.32	32.44	30.02	29.50	28.19	26.22	26.24	25.38	27.87
Good	26.58	23.45	22.28	25.15	29.42	30.36	27.79	27.60	25.93	24.08	24.37	23.08	25.84
Medium and heavyweight (42 to 55 pounds)—													
Choice	25.55	23.02	21.06	24.70	28.98	30.24	27.98	26.48	25.05	22.92	22.25	20.92	24.93
Good	23.72	21.15	19.28	22.95	27.25	28.72	26.64	25.05	23.97	21.62	21.22	19.66	23.44
All weights—													
Medium	24.98	22.35	21.60	24.58	27.45	27.76	24.60	24.85	23.28	22.12	22.26	21.20	23.92
Common	23.28	21.10	19.80	22.70	26.08	25.30	20.70	20.75	19.87	19.15	19.76	18.98	21.45
Spring lamb—													
Good and choice			33.10	33.90	34.08	35.08							
Medium					31.98	32.20							
Common						29.42							
Mutton (ewes)—													
Good	15.65	15.00	15.00	15.45	16.40	13.38	12.05	13.12	13.14	13.00	13.50	14.84	14.21
Medium	13.32	13.00	13.22	13.82	14.70	11.52	10.50	10.88	10.98	11.00	11.50	12.72	12.26
Common	11.35	11.22	11.94	12.70	13.50	10.05	9.38	9.50	9.26	9.00	9.50	10.60	10.67

Fresh pork cuts:													
Hams, 12 to 16 pounds average	21.75	23.78	26.10	27.38	27.62	26.63	26.25	25.75	27.80	26.38	24.90	23.38	25.64
Loins—													
8 to 10 pounds average	22.85	23.15	24.75	28.48	29.15	29.02	28.49	28.42	32.59	30.72	24.60	22.82	27.09
10 to 12 pounds average	21.80	21.76	23.38	26.70	27.61	27.24	26.49	25.12	30.63	29.78	23.75	21.72	25.50
12 to 15 pounds average	20.85	20.45	21.62	24.55	25.91	25.47	22.70	20.38	26.69	28.50	22.78	20.72	23.38
15 to 18 pounds average	19.35	19.55	20.15	20.90	23.69	22.71	18.70	16.32	21.97	24.95	21.02	19.88	20.77
18 to 22 pounds	18.58	19.09	19.33	20.00	22.75	21.27	17.42	15.30	20.57	23.94	19.90	18.79	19.74
Shoulders—													
Skinned	16.15	16.50	17.30	18.75	19.24	20.01	19.12	18.20	19.71	20.21	18.04	16.63	18.32
Picnics, 4 to ● pounds	14.75	15.49	16.16	16.55	17.20								
Butts, Boston style	19.60	20.18	21.90	23.20	24.06	24.83	23.67	22.90	24.50	25.52	22.10	20.78	22.77
Spareribs	15.72	15.94	15.64	16.69	15.65	15.55	14.60	13.89	15.36	17.60	16.01	16.62	15.77
Cured pork cuts and lard:													
Hams, smoked, 14 to 16 pounds average	29.25	29.00	29.10	29.00	30.00	33.65	34.00	33.88	33.50	32.25	30.70	29.30	31.14
Shoulders, picnic smoked	20.38	20.00	20.35	20.88	22.06	24.75	24.50	24.25	23.00	23.00	21.45	18.20	21.90
Bacon, breakfast	32.25	32.38	33.05	34.19	35.81	40.30	41.00	40.75	41.60	41.25	38.80	36.40	37.32
Lard, tierces	16.81	16.41	16.70	16.75	17.13	18.48	18.00	17.38	17.50	16.75	15.75	15.25	16.91
Lard substitutes, tierces	13.81	14.00	15.17	15.68	15.84	17.20	16.88	15.88	15.50	14.38	12.12	11.65	14.84

NEW YORK

Beef:													
Steer—													
Heavy weight (700 pounds up)—													
Choice	17.54	16.85	16.75	17.54	16.55	16.85	16.31	16.50	18.58	18.01	17.90	18.22	17.30
Good	15.82	14.99	15.33	16.41	15.48	15.91	15.48	15.52	16.65	15.61	15.89	16.44	15.79
Light and medium weight (under 700 pounds)—													
Choice	17.71	16.92	16.94	17.98	16.84	17.30	16.72	16.82	19.46	19.18	19.35	19.72	17.91
Good	15.66	14.99	15.30	16.76	15.56	15.92	15.64	15.56	16.88	15.91	16.35	17.20	15.98
All weights—													
Medium	14.15	13.50	14.11	15.62	13.99	14.24	12.73	12.95	13.64	12.66	13.47	14.43	13.71
Common	13.00		13.19	14.11	12.69	12.69	10.32	10.89	11.39	10.75	11.47	12.58	
Cow—													
Good	12.80	12.98	13.15	14.12	13.32	13.73	12.48	12.10	13.00	12.11	12.56	12.79	12.93
Medium	11.41	11.46	11.40	12.38	12.34	13.01	11.25	10.5[illegible]	11.29	10.75	11.28	11.20	11.52
Common	10.02	10.09	10.25	11.38	11.49	11.73	9.79	9.28	10.09	9.75	10.00	9.70	10.30
Veal:													
Vealers—													
Choice	22.95	23.54	22.48	21.12	21.72	21.48	22.48	24.40	25.07	23.25	22.30	20.92	22.64
Good	21.45	22.04	20.46	18.68	19.05	18.92	19.62	21.30	22.46	21.18	19.80	18.74	20.31
Medium	19.22	19.54	17.66	16.18	16.55	16.86	17.82	18.08	20.00	19.10	17.30	15.84	17.90
Common	17.50	17.71	16.18	14.50	14.75	14.82	15.55	16.18	17.76	16.98	15.30	13.92	15.93
Calf carcasses—													
Choice	18.40	18.09	16.56	17.00			18.72	19.55	17.16	14.50	15.20	14.50	
Good	16.40	16.24	15.16	16.00		17.05	16.95	17.85	15.20	12.42	13.20	12.50	
Medium	15.40	14.76	13.86	15.00		14.30	14.72	15.28	13.56	11.20	11.50	11.50	
Common	14.40	13.31	12.06	14.00		12.61	13.70	13.65	12.16	10.20	10.50		

TABLE 469.—*Meats, fresh and smoked: Average wholesale price per 100 pounds at Chicago and New York, by months, 1926*—Continued

NEW YORK—Continued

Class of meat	January	February	March	April	May	June	July	August	September	October	November	December	Average
Lamb and mutton:													
Lamb—													
Light and handy weight (30 to 42 pounds)—	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Choice	28.75	25.26	24.38	26.95	30.82	31.23	28.61	29.35	27.54	25.50	26.66	25.70	27.56
Good	27.45	24.14	22.34	25.65	29.48	30.17	26.81	27.82	25.44	23.50	24.94	24.02	25.98
Medium and heavy weight (42 to 55 pounds)—													
Choice	27.38	23.86	22.34	26.18	29.78	31.88				24.15	25.64	24.38	
Good	26.30	22.06	21.34	24.10	28.52	30.88				23.15	24.44	23.04	
All weights—													
Medium	25.75	21.74	21.84	23.92	27.85	28.88	25.44	25.50	23.23	21.40	24.00	22.18	24.31
Common	24.55					24.40	23.24	21.70	20.34	20.25	21.26	19.98	
Spring lamb—													
Good and choice			31.04	33.45	33.78	36.68							
Medium				30.30	30.50	33.91							
Common					28.25	31.55							
Mutton (ewes)—													
Good	16.65	15.72	16.42	17.90	16.38	15.18	15.95	13.22	13.74	12.09	13.80	13.18	15.02
Medium	14.90	14.18	15.34	16.48	14.68	13.36	14.45	11.55	11.78	10.70	12.12	11.42	13.41
Common	13.28	13.06	14.34	15.35	13.31	11.26	12.75	9.55	10.04	9.18	10.40	9.82	11.86
Fresh pork cuts:													
Hams, 12 to 16 pounds average	25.62	27.00	27.40	27.00	27.00	27.80	30.38	29.00	28.50	27.75	26.12	24.90	27.37
Loins—													
8 to 10 pounds average	24.62	25.16	26.40	29.61	30.20	30.51	29.25	29.58	33.45	32.32	26.08	24.74	28.49
10 to 12 pounds average	23.49	23.96	25.10	28.08	28.60	29.18	27.22	27.09	31.37	31.05	25.44	23.89	27.04
12 to 15 pounds average	21.91	21.95	23.08	26.00	27.02	27.45	24.62	22.28	27.92	29.68	24.21	22.68	24.90
15 to 18 pounds average	20.79	21.04	22.03	24.80	25.64	26.21	22.34	20.55	24.30	26.92	23.31	21.77	23.31
18 to 22 pounds	20.14	20.40	21.02	23.00	24.28	24.99	20.05	18.28	22.04	25.22	22.17	21.12	21.89
Shoulders—													
Skinned	17.82	18.58	19.71	20.22	20.35	21.50	20.66	19.82	21.28	21.18	19.80	19.30	20.02
Picnics, 6 to 8 pounds	17.18	17.22	17.97	19.06	18.81	20.10	19.60	18.40	18.80	17.85	17.16	16.20	18.20
Butts, Boston style	22.55	22.45	22.90	23.30	24.48	26.20	25.85	25.10	26.32	26.85	25.12	22.98	24.51
Spareribs	18.50	18.00	18.80	19.00	19.00	19.00	18.38	15.88	16.60	18.00	19.50	19.00	18.30
Cured pork cuts and lard:													
Hams, smoked, 10 to 12 pounds average	27.88	28.75	28.50	29.25	31.15	33.60	35.38	33.62	33.16	31.38	29.75	27.10	30.79
Shoulders, picnic smoked	18.00	18.75	19.00	19.50	19.69	23.10	23.25	21.12	20.80	20.25	20.00	19.30	20.28
Bacon, breakfast	26.00	28.50	28.50	28.25	30.38	32.10	32.00	31.25	30.46	29.88	28.75	26.18	29.35
Lard, tierces	16.22	16.25	16.10	15.50	16.50	17.55	17.44	16.38	15.95	15.50	14.00	13.70	15.98
Lard substitutes, tierces	13.06	13.25	13.60	13.88	14.50	16.85	17.44	16.72	14.93	12.75	11.38	10.78	14.09

Division of Statistical and Historical Research. Compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

TABLE 470.—*Hides, packer: Average price per pound at Chicago, average 1894–1925; annual, 1920–1926*

Year	Steers					Cows			Bulls	
	Heavy native	Heavy Texas	Light Texas	Butt branded	Colorados	Heavy native	Light native	Branded	Native	Branded
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1894–1898	9.24	8.68	8.06	8.23	7.53	8.28	8.30	7.53	7.25	5.83
1899–1903	12.34	12.80	11.56	11.37	11.01	10.75	10.13	10.03	10.05	8.45
1904–1908	13.86	13.96	13.23	12.67	12.49	12.65	12.24	11.94	10.85	9.46
1909–1913	16.53	16.05	15.30	15.26	15.06	15.31	15.03	14.39	13.21	11.89
1914–1920	29.17	26.74	25.87	26.32	25.55	27.86	26.89	24.43	22.66	20.08
1921–1925	15.76	14.67	13.47	14.64	13.64	14.10	13.28	11.66	10.83	9.25
1920	31.65	27.52	26.38	27.25	26.02	31.08	29.23	24.93	24.97	22.28
1921	13.88	13.10	11.43	12.83	11.85	12.41	11.37	10.00	8.40	7.13
1922	17.83	16.57	15.29	16.51	15.59	16.10	15.16	13.47	11.96	10.15
1923	16.46	14.79	13.77	14.89	13.86	14.21	12.94	11.11	11.69	9.89
1924	14.67	13.82	12.80	13.80	12.79	12.95	12.29	10.41	10.14	8.79
1925	15.96	15.08	14.06	15.16	14.12	14.82	14.62	13.30	11.98	10.20
1926	14.08	13.38	12.67	13.34	12.82	12.71	13.11	12.05	9.98	8.57

Division of Statistical and Historical Research. Compiled from annual reports of the Chicago Board of Trade, 1909, page 97, and 1925, page 108. 1926 prices from Chicago Drovers Journal Yearbook.
Data 1893–1919 available in 1925 Yearbook, p. 1199, Table 610.

TABLE 471.—*Hides, country: Average price per pound at Chicago, average 1894–1925; annual, 1920–1926*

Year	Extremes	Heavy steers	Heavy cows	No. 1 buffs	No. 2 buffs	Bulls	Country packer brands	Country brands	No. 1 calfskins	No. 1 kipskins
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1894–1898	8.06	8.11	7.56	7.54	7.05	6.43	7.15	6.84	10.55	8.94
1899–1903	9.28	10.46	9.35	9.05	8.20	8.33	9.31	8.65	12.12	10.06
1904–1908	11.21	11.80	11.05	10.97	9.95	9.29	10.67	9.91	14.56	11.88
1909–1913	13.67	13.64	13.11	13.06	12.07	10.99	12.20	11.36	17.21	14.42
1914–1920	23.35	23.07	21.05	21.03	19.88	18.14	21.48	17.82	38.79	29.23
1921–1925	11.96	11.10	9.90	10.06	8.89	7.98	10.48	8.24	19.39	16.61
1920	22.79	24.20	19.27	18.93	17.93	18.76	20.60	14.94	40.98	33.97
1921	8.95	9.35	7.32	7.10	5.77	5.43	7.43	5.33	18.57	15.58
1922	12.93	12.03	10.85	10.86	9.52	8.23	12.53	8.42	18.95	17.29
1923	11.65	11.39	10.43	10.45	9.26	8.93	10.12	8.70	17.18	15.42
1924	11.86	11.31	9.24	9.63	8.63	7.86	9.81	8.23	20.39	16.62
1925	14.41	12.94	11.64	12.26	12.25	9.46	12.52	10.54	21.88	18.12
1926	13.46	11.63	9.54	10.70	9.70	8.03	10.52	9.00	18.02	16.12

Division of Statistical and Historical Research. Compiled from annual reports of the Chicago Board of Trade, 1909, page 97, and 1925, page 108. 1926 prices from Chicago Drovers Journal Yearbook.
Data 1893–1919 available in 1925 Yearbook, p. 1199, Table 611.

TABLE 472.—*Horses and mules: Number and value on farms, United States, January 1, 1910–1926*

Jan. 1—	Horses			Mules		
	Number	Price per head Jan. 1	Farm value Jan. 1	Number	Price per head Jan. 1	Farm value Jan. 1
	Thousands	*Dollars*	*Thousand dollars*	*Thousands*	*Dollars*	*Thousand dollars*
Average 1914–1920	21,047	102.38	2,154,764	4,785	126.62	605,889
1910, Apr. 15	*19,833*	108.03	2,142,524	*4,210*	120.20	506,049
1911	20,277	111.46	2,259,981	4,323	125.92	544,359
1912	20,509	105.94	2,172,694	4,362	120.51	525,657
1913	20,567	110.77	2,278,222	4,386	124.31	545,245
1914	20,962	109.32	2,291,638	4,449	123.85	551,017
1915	21,195	103.33	2,190,102	4,479	112.36	503,271
1916	21,159	101.60	2,149,786	4,593	113.83	522,834
1917	21,210	102.89	2,182,307	4,723	118.15	558,006
1918	21,555	104.24	2,246,970	4,873	128.81	627,679
1919	21,482	98.45	2,114,897	4,954	135.83	672,922
1920	19,848	96.52	1,915,653	5,475	148.46	812,828
1921	19,134	84.57	1,618,120	5,586	117.52	656,455
1922	18,564	71.18	1,321,396	5,638	89.14	502,563
1923	17,943	70.65	1,267,624	5,702	87.17	497,044
1924	17,222	65.48	1,127,619	5,730	85.90	492,209
1925	16,489	64.26	1,059,553	5,725	82.73	473,646
1926	15,840	65.46	1,036,896	5,733	81.46	466,988
1927[1]	15,279	63.81	974,886	5,734	74.32	426,175

Division of Crop and Livestock Estimates; figures in italics are census returns.

[1] Preliminary.

Table 473.—*Horses and colts: Estimated number and value on farms, by States, January 1, 1925–1927*

State	Number, Jan. 1			Value per head, Jan. 1			Total value, Jan. 1		
	1925	1926	1927 [1]	1925	1926	1927	1925	1926	1927 [1]
	Thousands	*Thousands*	*Thousands*	*Dollars*	*Dollars*	*Dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Maine	84	80	79	119.00	129.00	130.00	10,035	10,350	10,298
New Hampshire	32	30	29	105.00	100.00	105.00	3,360	3,000	3,045
Vermont	64	61	59	104.00	110.00	110.00	6,677	6,725	6,508
Massachusetts	45	41	38	124.00	119.00	120.00	5,585	4,875	4,560
Rhode Island	6	6	5	124.00	120.00	120.00	744	720	600
Connecticut	35	33	31	127.00	120.00	128.00	4,445	3,960	3,968
New York	440	418	401	108.00	111.00	109.00	47,569	46,422	43,755
New Jersey	57	54	54	109.00	107.00	109.00	6,235	5,799	5,908
Pennsylvania	410	390	374	96.00	103.00	99.00	39,249	40,031	36,970
Ohio	630	598	568	85.00	91.00	95.00	53,795	54,610	54,130
Indiana	556	548	533	69.00	78.00	80.00	38,196	42,960	42,816
Illinois	1,030	978	929	69.00	74.00	74.00	70,988	72,130	68,534
Michigan	482	463	444	84.00	89.00	89.00	40,398	40,980	39,328
Wisconson	604	591	579	88.00	93.00	95.00	53,312	55,078	55,208
Minnesota	835	827	810	77.00	81.00	77.00	64,017	66,733	62,645
Iowa	1,180	1,145	1,111	72.00	74.00	74.00	84,714	84,305	82,728
Missouri	708	670	636	48.00	49.00	48.00	33,710	32,553	30,340
North Dakota	731	708	694	56.00	56.00	52.00	40,726	39,808	35,960
South Dakota	720	684	657	48.00	49.00	47.00	34,760	33,571	30,753
Nebraska	862	840	815	58.00	61.00	56.00	49,775	50,951	45,458
Kansas	931	894	858	46.00	48.00	41.00	43,149	42,945	35,299
Delaware	23	22	21	74.00	79.00	69.00	1,700	1,740	1,450
Maryland	117	112	104	74.00	77.00	78.00	8,695	8,664	8,074
Virginia	261	238	224	71.00	66.00	66.00	18,577	15,703	14,684
West Virginia	147	140	133	76.00	75.00	74.00	11,216	10,445	9,834
North Carolina	130	120	114	99.00	86.00	83.00	12,812	10,280	9,463
South Carolina	55	49	45	97.00	89.00	76.00	5,309	4,382	3,406
Georgia	56	51	48	86.00	83.00	73.00	4,789	4,218	3,510
Florida	29	28	27	98.00	97.00	82.00	2,830	2,703	2,218
Kentucky	314	305	293	50.00	50.00	47.00	15,820	15,125	13,740
Tennessee	255	242	225	60.00	53.00	52.00	15,256	12,901	11,762
Alabama	90	86	87	70.00	68.00	63.00	6,305	5,878	5,504
Mississippi	142	129	122	61.00	60.00	55.00	8,688	7,744	6,752
Arkansas	188	169	164	42.00	42.00	39.00	7,896	7,178	6,468
Louisiana	132	126	120	62.00	55.00	49.00	8,149	6,929	5,895
Oklahoma	614	589	565	41.00	37.00	35.00	24,916	21,651	19,598
Texas	857	848	848	54.00	48.00	45.00	46,221	40,890	37,820
Montana	596	576	564	32.00	29.00	30.00	19,139	16,496	17,132
Idaho	233	221	212	45.00	52.00	52.00	10,538	11,484	11,046
Wyoming	200	198	194	29.00	29.00	31.00	5,831	5,788	6,043
Colorado	367	352	341	43.00	47.00	44.00	15,621	16,373	14,891
New Mexico	188	175	166	38.00	37.00	34.00	7,112	6,432	5,580
Arizona	112	106	101	59.00	50.00	50.00	6,630	5,328	5,091
Utah	110	106	104	61.00	61.00	61.00	6,669	6,445	6,303
Nevada	50	47	44	56.00	53.00	53.00	2,792	2,511	2,322
Washington	242	230	218	63.00	62.00	60.00	15,195	14,260	13,058
Oregon	225	214	201	67.00	65.00	62.00	14,966	13,814	12,405
California	314	302	290	78.00	76.00	76.00	24,448	22,938	22,025
United States	16,489	15,840	15,279	64.26	65.46	63.81	1,059,553	1,036,896	974,886

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 474.—*Mules and mule colts: Estimated number and value on farms, by States, January 1, 1925–1927*

State	Number, Jan. 1			Value per head, Jan. 1			Total value, Jan. 1		
	1925	1926	1927 [1]	1925	1926	1927	1925	1926	1927 [1]
	Thousands	*Thousands*	*Thousands*	*Dollars*	*Dollars*	*Dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
New York	7	7	7	115.00	112.00	120.00	805	784	840
New Jersey	5	5	5	125.00	114.00	118.00	625	570	590
Pennsylvania	53	53	52	105.00	113.00	110.00	5,573	5,996	5,723
Ohio	33	32	33	93.00	96.00	94.00	3,075	3,080	3,109
Indiana	101	99	98	76.00	86.00	86.00	7,694	8,554	8,381
Illinois	168	165	160	80.00	85.00	85.00	13,364	13,982	13,611
Michigan	7	7	8	83.00	86.00	86.00	582	602	692
Wisconsin	7	7	7	85.00	87.00	82.00	597	611	572
Minnesota	13	13	14	80.00	79.00	78.00	1,034	1,030	1,092
Iowa	97	98	99	83.00	85.00	83.00	8,035	8,330	8,224
Missouri	372	365	358	67.00	71.00	67.00	[illegible],913	25,820	23,818
North Dakota	9	9	10	62.00	59.00	55.00	560	528	546
South Dakota	21	22	22	61.00	64.00	56.00	1,281	1,414	1,229
Nebraska	120	120	118	74.00	78.00	69.00	8,932	9,398	8,135
Kansas	260	252	247	63.00	66.00	57.00	16,307	16,716	14,135
Delaware	9	9	9	90.00	100.00	91.00	810	900	819
Maryland	31	31	30	94.00	104.00	101.00	2,911	3,219	3,023
Virginia	104	104	103	91.00	87.00	85.00	9,458	9,069	8,779
West Virginia	15	15	15	86.00	85.00	78.00	1,290	1,273	1,175
North Carolina	279	276	279	119.00	117.00	107.00	33,318	32,405	29,981
South Carolina	199	193	185	122.00	120.00	95.00	24,242	23,124	17,548
Georgia	338	341	341	115.00	112.00	95.00	38,704	38,022	32,274
Florida	43	43	43	139.00	134.00	117.00	5,960	5,750	5,026
Kentucky	301	304	301	63.00	63.00	58.00	18,822	19,087	17,572
Tennessee	352	356	352	74.00	72.00	68.00	25,946	25,534	23,904
Alabama	309	312	315	90.00	95.00	84.00	27,947	29,764	26,605
Mississippi	330	336	343	89.00	86.00	79.00	29,290	28,998	26,928
Arkansas	339	346	349	64.00	63.00	59.00	21,855	21,629	20,476
Louisiana	174	176	176	90.00	90.00	79.00	15,591	15,774	13,862
Oklahoma	369	369	365	61.00	57.00	51.00	22,594	20,937	18,586
Texas	1,042	1,052	1,073	83.00	75.00	69.00	86,207	79,020	74,525
Montana	11	11	11	47.00	50.00	45.00	514	552	495
Idaho	8	8	8	52.00	61.00	60.00	417	487	482
Wyoming	6	6	6	49.00	49.00	49.00	293	296	295
Colorado	39	38	37	57.00	59.00	56.00	2,225	2,213	2,058
New Mexico	33	34	34	58.00	54.00	45.00	1,911	1,819	1,520
Arizona	12	11	12	85.00	90.00	77.00	1,020	990	925
Utah	4	4	4	62.00	64.00	62.00	248	258	248
Nevada	4	4	4	62.00	64.00	60.00	250	258	241
Washington	27	27	28	68.00	67.00	72.00	1,826	1,807	2,014
Oregon	18	19	20	72.00	73.00	70.00	1,305	1,394	1,394
California	56	54	53	95.00	92.00	89.00	5,315	4,964	4,723
United States	5,725	5,733	5,734	82.73	81.46	74.32	473,643	466,988	426,175

Division of Crop and Livestock Estimates.

[1] Preliminary.

TABLE 475.—*Horses and mules: Receipts at principal markets and at all markets reported, 1900–1926*

[Thousands—i. e., 000 omitted]

Year	Chicago	Denver	East St. Louis	Fort Worth	Kansas City	Omaha	South St. Joseph	South St. Paul	Sioux City	Total	All other markets reporting[1]	Total all markets reporting[1]
1900	99	23	145	(2)	103	60	13	27	31	501	------	------
1901	109	17	120	(2)	97	86	23	15	18	444	------	------
1902	102	24	109	5	77	42	20	8	19	406	------	------
1903	101	19	129	10	67	53	20	8	12	419	------	------
1904	106	13	181	18	68	47	29	6	4	472	------	------
1905	127	16	178	18	66	45	32	6	15	503	------	------
1906	127	17	166	21	70	42	28	9	19	499	------	------
1907	102	11	117	19	62	44	27	15	16	413	------	------
1908	92	11	109	12	56	40	23	7	13	363	------	------
1909	91	15	122	21	68	32	23	6	15	393	------	------
1910	83	16	130	34	70	30	28	5	16	412	------	------
1911	105	18	171	37	85	32	42	8	17	515	------	------
1912	93	15	164	49	73	33	39	5	10	481	------	------
1913	91	16	157	57	82	32	32	5	10	482	------	------
1914	106	17	148	48	87	31	25	6	10	478	------	------
1915	165	72	271	55	102	42	41	10	22	780	327	1,107
1916	205	53	267	79	123	27	27	12	17	810	668	1,473
1917	107	20	280	115	128	33	34	10	29	756	720	1,476
1918	88	15	242	79	85	22	39	7	23	600	616	1,216
1919	46	23	250	60	83	25	43	11	16	557	511	1,058
1920	43	18	141	45	72	19	30	10	23	401	324	25
1921	34	10	68	13	30	7	12	5	7	186	131	317
1922	32	13	95	29	38	9	16	2	8	242	201	443
1923	26	23	102	58	43	17	15	3	15	302	249	551
1924	21	37	64	46	36	12	11	4	14	245	223	468
1925	18	44	65	34	34	15	9	5	18	242	226	468
1926	18	29	53	27	29	17	9	10	19	211	180	391

Division of Statistical and Historical Research. Prior to 1915 receipts compiled from yearbooks of stockyard companies; subsequent figures compiled from data of the reporting service of the Division of Livestock, Meats, and Wool.

[1] Figures prior to 1915 not available. [2] Not in operation.

TABLE 476.—*Horses and mules: Farm value per head, by age groups, United States, January 1, 1910–1927*

Jan. 1—	Horses			Mules		
	Under 1 year old	1 and under 2 years	2 years and over	Under 1 year old	1 and under 2 years	2 years and over
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
1910	46.05	72.63	116.57	56.76	84.53	128.96
1911	48.09	75.68	120.04	59.89	88.13	135.11
1912	45.75	71.96	114.24	56.12	83.00	129.46
1913	48.75	76.54	121.06	59.31	86.56	134.05
1914	47.95	74.87	119.77	57.45	83.87	133.76
1915	45.36	70.62	113.10	51.80	76.46	121.46
1916	44.30	69.08	111.34	51.59	76.82	123.55
1917	45.17	70.21	112.64	53.98	80.28	128.17
1918	45.20	70.21	114.30	57.61	86.32	139.88
1919	42.62	65.94	108.17	59.14	89.14	147.65
1920	37.22	58.81	103.52	60.16	90.14	160.55
1921	31.59	49.66	90.35	47.55	71.77	125.85
1922	26.50	41.07	75.61	35.55	52.82	94.81
1923	26.51	40.48	74.53	34.35	50.94	92.14
1924	24.68	37.36	68.64	31.83	47.06	90.42
1925	23.88	37.15	66.83	30.65	46.63	86.20
1926	24.83	37.77	68.19	31.30	47.95	84.73
1927	23.68	36.97	66.59	29.34	44.17	77.20

Division of Crop and Livestock Estimates.

TABLE 477.—*Horses: Price per head received by producers, United States, 1910–1926*

Year	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Weighted average
Average:	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1910–1913	139	144	145	148	146	147	143	143	142	140	138	137	142
1914–1920	127	130	132	133	134	133	132	130	127	125	122	121	128
1921–1925	81	84	86	86	87	86	85	83	82	80	78	76	82
1910	140	147	150	154	148	151	148	148	145	144	143	141	146
1911	143	144	145	147	146	145	139	141	139	137	136	134	141
1912	134	137	140	142	144	145	142	142	141	140	139	139	140
1913	140	146	146	148	145	146	143	141	141	138	136	135	142
1914	137	139	138	138	139	136	137	135	132	131	130	130	135
1915	130	132	132	132	133	132	134	131	131	129	127	126	130
1916	128	129	131	133	134	132	133	131	131	130	129	129	130
1917	129	131	133	136	138	137	135	132	132	130	129	129	132
1918	130	133	137	137	136	135	132	131	128	126	122	121	130
1919	120	121	124	127	129	127	127	125	119	114	113	113	121
1920	118	123	127	131	132	130	127	124	119	112	103	97	119
1921	96	98	101	100	98	98	94	93	89	85	82	81	92
1922	82	84	86	87	89	88	88	86	84	81	79	79	84
1923	81	85	85	86	88	87	85	83	82	80	78	75	82
1924	73	74	75	76	78	77	77	79	78	77	76	73	76
1925	73	78	81	83	82	81	81	80	77	76	75	74	78
1926	75	80	82	84	84	83	82	80	78	77	75	73	79

Division of Crop and Livestock Estimates. As reported by country dealers.

TABLE 478.—*Horses: Estimated price per head, received by producers, by States, 1926*

State	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Average
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Maine	118	130	141	139	150	160	140	145	150	135	130	120	138
New Hampshire	115	135	124	150	140	110	140	134	120	118	129	127	128
Vermont	109	116	123	143	138	120	130	140	144	130	138	126	130
Massachusetts	158	130	150	168	------	140	125	------	125	125	140	115	138
Rhode Island	125	150	150	125	125	150	150	------	------	100	125	130	133
Connecticut	108	150	------	195	------	175	141	160	155	145	155	144	153
New York	117	127	128	133	133	133	129	128	128	130	117	115	126
New Jersey	140	138	150	150	158	146	160	150	145	150	171	150	151
Pennsylvania	115	114	124	124	126	120	114	106	118	124	119	108	118
Ohio	89	100	106	110	105	110	102	94	97	101	99	93	100
Indiana	82	85	88	88	89	88	87	85	83	76	78	76	84
Illinois	79	85	87	87	89	92	91	83	81	83	91	81	86
Michigan	95	98	102	110	101	107	106	97	110	106	87	92	101
Wisconsin	106	106	118	118	119	120	114	117	101	113	108	100	112
Minnesota	92	98	104	104	108	101	107	101	96	94	91	92	99
Iowa	91	96	101	99	100	102	100	98	96	95	94	90	97
Missouri	56	70	66	65	65	63	65	60	56	58	55	51	61
North Dakota	74	82	86	85	83	81	91	79	80	72	72	73	80
South Dakota	67	68	80	75	72	73	66	68	63	66	63	61	68
Nebraska	83	85	86	87	78	82	83	79	77	74	73	72	80
Kansas	60	67	67	69	67	68	67	62	57	54	53	53	62
Delaware	------	60	66	85	74	84	78	60	70	73	67	70	72
Maryland	90	105	101	108	99	95	90	97	92	94	93	85	96
Virginia	65	64	72	70	74	76	71	65	70	69	67	65	69
West Virginia	78	81	86	90	94	91	90	83	82	76	78	84	84
North Carolina	73	90	85	82	90	84	82	82	80	78	82	72	82
South Carolina	76	81	82	85	81	85	84	81	91	78	67	73	80
Georgia	71	70	81	86	86	80	79	75	77	74	67	62	76
Florida	85	87	100	98	90	100	100	130	100	80	97	100	97
Kentucky	51	49	54	54	57	53	55	54	56	53	50	51	53
Tennessee	60	55	63	63	64	65	58	56	60	58	55	59	60
Alabama	70	72	76	76	73	72	75	74	70	68	60	56	70
Mississippi	61	57	60	65	68	63	60	61	59	63	63	63	62
Arkansas	46	52	52	57	54	60	51	52	50	45	43	44	50
Louisiana	66	55	58	60	56	65	63	70	67	46	60	54	60
Oklahoma	42	47	44	48	53	52	49	51	44	47	40	42	47
Texas	54	58	55	54	58	59	61	60	57	52	49	52	56
Montana	41	43	46	50	45	40	44	40	50	44	40	38	43
Idaho	68	64	68	70	79	75	68	71	57	66	65	63	68
Wyoming	47	48	50	47	59	52	46	65	48	67	36	58	51
Colorado	68	67	67	72	71	75	69	71	61	61	59	61	67
New Mexico	43	50	40	50	38	45	43	50	55	40	44	45	45
Arizona	71	------	54	65	53	54	60	50	------	60	62	45	57
Utah	76	81	80	87	79	72	80	85	85	75	88	81	81
Nevada	------	70	------	------	------	------	------	------	86	75	55	45	66
Washington	67	80	73	85	95	82	70	80	70	80	68	80	78
Oregon	85	72	83	88	83	80	77	74	70	70	72	70	77
California	79	90	89	90	92	90	80	90	80	84	91	95	88
United States	75.48	79.53	82.48	83.92	83.60	83.38	82.03	79.57	77.85	76.99	74.59	72.79	79.35

Division of Crop and Livestock Estimates.

POULTRY

Table 479.—*Poultry, dressed: Receipts, gross weight, at four markets, 1920–1926*

[Thousand pounds—i. e., 000 omitted]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
BOSTON													
Av. 1921-1925	5, 130	3, 328	2, 526	1, 955	2, 394	2, 718	2, 480	2, 588	2, 692	4, 009	9, 092	10, 785	49, 696
1920	3, 934	1, 749	1, 597	1, 037	1, 464	2, 221	1, 858	1, 696	2, 096	2, 628	5, 911	7, 895	34, 086
1921	3, 377	2, 229	1, 465	1, 707	1, 795	2, 086	1, 499	2, 437	2, 482	3, 581	7, 472	9, 791	39, 921
1922	4, 175	2, 765	2, 478	1, 705	2, 551	2, 883	2, 091	2, 198	2, 479	3, 306	7, 488	10, 444	44, 563
1923	7, 690	3, 785	2, 917	1, 946	2, 439	2, 778	2, 427	2, 661	2, 674	4, 418	10, 752	11, 526	56, 013
1924	6, 210	4, 607	3, 072	2, 235	2, 602	2, 952	3, 492	2, 856	3, 270	4, 402	11, 842	13, 724	61, 264
1925	4, 200	3, 252	2, 697	2, 181	2, 582	2, 893	2, 893	2, 786	2, 554	4, 336	7, 907	8, 439	46, 720
1926	3, 778	2, 981	2, 837	2, 052	2, 598	3, 196	3, 161	3, 677	3, 960	4, 089	8, 891	11, 942	53, 162
NEW YORK													
Av. 1921-1925	14, 791	9, 810	7, 559	6, 765	8, 000	8, 887	8, 737	9, 574	10, 887	14, 720	25, 594	29, 943	155, 266
1920	11, 217	7, 557	3, 928	1, 367	5, 480	5, 292	6, 129	4, 428	6, 273	8, 053	17, 651	23, 718	101, 093
1921	11, 441	7, 006	5, 190	5, 021	4, 883	6, 150	5, 314	8, 992	10, 277	11, 887	21, 182	27, 208	124, 551
1922	10, 783	6, 909	6, 371	6, 399	7, 896	8, 822	6, 785	7, 768	9, 115	12, 594	22, 232	32, 538	138, 212
1923	21, 730	12, 335	8, 390	6, 916	6, 804	8, 589	9, 414	9, 497	9, 653	16, 509	26, 822	27, 289	163, 948
1924	15, 603	11, 927	9, 893	7, 368	10, 172	10, 157	10, 502	10, 504	12, 981	15, 916	28, 875	35, 464	179, 362
1925	14, 400	10, 871	7, 949	8, 119	10, 245	10, 717	11, 668	11, 110	12, 409	16, 696	28, 857	27, 216	170, 257
1926	13, 078	10, 646	9, 921	8, 248	10, 594	14, 041	13, 555	14, 609	15, 068	18, 129	31, 924	33, 082	192, 895
PHILADELPHIA													
Av. 1921-1925	2, 217	1, 648	1, 553	1, 071	1, 223	1, 495	1, 416	1, 545	1, 429	1, 784	3, 514	6, 257	25, 151
1920	1, 553	1, 881	1, 906	918	1, 466	1, 286	1, 019	1, 215	1, 044	1, 588	2, 348	5, 382	21, 606
1921	1, 498	1, 071	1, 411	1, 005	1, 303	1, 565	1, 226	1, 419	1, 587	2, 020	2, 882	5, 905	22, 892
1922	1, 947	1, 790	1, 077	664	1, 182	1, 304	1, 237	1, 217	1, 237	1, 356	2, 653	5, 655	21, 319
1923	2, 206	1, 530	1, 388	1, 042	1, 055	1, 509	1, 343	1, 618	1, 348	1, 749	3, 281	6, 542	24, 611
1924	2, 614	1, 818	1, 704	1, 194	1, 234	1, 458	1, 536	1, 660	1, 421	1, 873	4, 053	7, 075	27, 640
1925	2, 818	2, 030	2, 183	1, 450	1, 343	1, 638	1, 739	1, 810	1, 552	1, 924	4, 702	6, 106	29, 295
1926	2, 906	1, 791	2, 203	1, 717	1, 374	1, 758	1, 853	2, 039	2, 352	2, 123	4, 916	7, 094	32, 126
CHICAGO													
Av. 1921-1925	8, 415	4, 570	3, 628	2, 668	2, 677	2, 997	2, 957	3, 033	3, 436	4, 568	15, 950	22, 997	77, 895
1920	6, 646	2, 687	980	816	1, 512	2, 369	2, 379	2, 659	3, 370	4, 001	10, 752	19, 153	57, 324
1921	6, 343	3, 328	2, 794	2, 104	2, 421	2, 524	2, 097	2, 615	3, 804	4, 157	15, 723	17, 082	64, 992
1922	5, 345	3, 042	3, 394	2, 744	2, 744	3, 597	3, 590	4, 250	4, 290	4, 178	13, 167	23, 320	73, 661
1923	11, 497	5, 208	4, 057	2, 532	2, 912	3, 329	3, 679	4, 018	4, 724	5, 411	15, 163	27, 743	90, 273
1924	12, 723	8, 043	5, 675	4, 385	3, 311	3, 295	4, 042	2, 523	2, 196	4, 791	15, 675	21, 805	88, 464
1925	6, 167	3, 230	2, 219	1, 573	1, 996	2, 239	1, 376	1, 760	2, 168	4, 303	20, 022	25, 033	72, 086
1926	6, 360	3, 159	2, 383	1, 792	1, 805	2, 105	2, 154	2, 607	2, 897	6, 397	22, 863	23, 110	77, 632
TOTAL													
Av. 1921-1925	30, 553	19, 355	15, 265	12, 458	14, 294	16, 097	15, 590	16, 740	18, 444	25, 081	54, 150	69, 981	308, 009
1920	23, 350	13, 874	8, 411	4, 138	9, 922	11, 168	11, 385	9, 998	12, 783	16, 270	36, 662	56, 148	214, 109
1921	22, 659	13, 634	10, 860	9, 837	10, 402	12, 325	10, 136	15, 463	18, 150	21, 645	47, 259	59, 986	252, 356
1922	22, 250	14, 506	13, 320	11, 512	14, 373	16, 606	13, 703	15, 433	17, 121	21, 434	45, 540	71, 957	277, 755
1923	43, 123	22, 858	16, 752	12, 436	13, 210	16, 205	16, 863	17, 794	18, 399	28, 087	56, 018	73, 100	334, 845
1924	37, 150	26, 395	20, 344	15, 182	17, 319	17, 862	19, 572	17, 543	19, 868	26, 982	60, 445	78, 068	356, 730
1925	27, 585	19, 383	15, 048	13, 323	16, 166	17, 487	17, 676	17, 466	18, 683	27, 259	61. 488	66, 794	318, 358
1926	26, 122	18, 576	17, 344	13, 809	16, 371	21, 099	20, 724	22, 932	24, 278	30, 738	68, 594	75, 228	355, 815

Division of Statistical and Historical Research. Compiled from reports of the Division of Dairy and Poultry Products.

TABLE 480.—*Poultry, dressed: Receipts, gross weight, at six markets, by State of origin, 1922–1926*

[Thousand pounds—i. e., 000 omitted]

BOSTON

State	1922	1923	1924	1925	1926 Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois	19,618	23,308	20,155	12,292	14,768	1,354	893	878	808	944	1,142	869	1,088	973	1,191	2,085	2,543
Indiana	5,939	6,558	7,382	6,524	4,884	440	366	285	171	321	280	278	290	477	540	640	796
Iowa	4,422	7,131	6,834	6,957	8,141	528	343	501	245	321	296	663	938	801	669	1,235	1,601
Ohio	1,708	1,141	1,216	255	300	13	-	(1)	-	3	-	34	-	25	(1)	76	149
Kansas	1,454	2,114	2,864	3,566	4,027	270	232	257	176	292	348	309	330	530	424	460	399
New York	1,454	1,850	1,111	1,045	1,251	63	97	96	140	85	119	43	34	36	81	185	272
Oklahoma	1,253	1,043	1,737	1,699	1,571	127	106	136	85	144	118	75	46	41	109	270	314
Minnesota	1,076	2,222	3,878	3,929	5,076	372	295	303	107	118	305	437	319	423	364	597	1,436
Michigan	1,015	527	911	622	524	22	-	-	-	-	26	2	29	14	63	180	188
Kentucky	1,005	1,330	854	822	970	2	3	(1)	2	25	8	5	4	-	4	501	416
Missouri	774	1,086	2,540	1,822	1,944	115	168	124	123	184	213	129	176	201	87	133	291
Wisconsin	680	291	612	375	1,236	17	59	64	2	14	15	57	95	167	185	275	286
Maine	647	791	706	709	438	42	27	14	9	5	6	11	17	55	79	102	71
Nebraska	471	682	1,336	1,707	2,297	118	155	93	110	87	255	165	213	140	129	406	426
Massachusetts	413	357	344	205	260	15	8	12	15	15	22	17	14	23	27	50	42
Vermont	200	149	105	74	34	2	2	1	(1)	(1)	(1)	1	(1)	2	2	16	8
Tennessee	65	39	73	118	234	22	-	-	-	-	-	-	-	-	20	91	101
New Hampshire	53	47	50	41	29	1	2	1	1	(1)	(1)	(1)	2	3	2	4	13
Pennsylvania	49	72	114	180	47	3	38	(1)	-	1	-	(1)	-	-	-	1	4
Maryland	39	59	92	11	24	-	-	-	-	-	-	-	-	-	-	23	1
North Dakota	14	294	314	237	553	24	42	22	18	8	17	-	-	7	20	54	341
South Dakota	3	121	101	92	131	1	2	(1)	(1)	-	-	16	-	-	-	23	89
Texas	(2)	(2)	6,185	2,797	3,703	159	47	25	20	20	20	48	78	38	86	1,363	1,799
Other States	2,189	4,681	1,750	467	555	40	53	25	20	11	[illegible]	2	4	4	7	114	269
Canada	22	120	-	174	165	28	43	(1)	(1)	-	-	-	-	-	-	7	87
Total	44,563	56,013	61,264	46,720	53,162	3,778	2,981	2,837	2,052	2,598	3,196	3,161	3,677	3,960	4,089	8,891	11,942

[1] Not over 500 pounds.

[2] Included in other States.

TABLE 480.—*Poultry, dressed: Receipts, gross weight at six markets, by State of origin, 1922–1926*—Continued

[Thousand pounds—i. e., 000 omitted]

CHICAGO

State	1922	1923	1924	1925	1926 Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Iowa	19,001	18,654	21,023	21,538	21,420	2,104	536	379	424	557	346	400	566	496	1,774	6,312	7,526
Illinois	18,720	17,497	13,184	4,517	5,920	390	201	83	144	94	89	328	348	405	540	1,529	1,769
Wisconsin	7,555	7,372	7,771	5,384	5,701	287	191	160	73	52	79	159	220	290	676	1,998	1,516
Minnesota	7,310	10,764	11,425	10,267	12,586	983	495	460	451	207	151	153	147	225	898	4,161	4,255
Missouri	3,952	6,231	5,980	4,621	3,828	339	102	143	78	168	113	276	226	443	490	748	702
South Dakota	3,348	4,509	6,396	5,954	7,388	615	444	310	132	140	318	293	329	266	530	2,234	1,777
North Dakota	3,292	7,594	5,984	5,714	6,041	409	342	226	58	36	52	49	58	82	330	2,243	2,156
Kansas	2,499	3,602	3,252	3,411	4,110	386	195	278	117	188	252	187	389	341	530	634	613
Nebraska	1,959	1,813	1,690	2,149	2,632	210	169	78	43	63	283	42	27	84	162	769	702
Indiana	1,347	818	849	731	411	74	32	15	7	5	12	18	8	20	21	97	102
Kentucky	849	937	508	80	107	2	25	1	3	6	4	(1)	(1)	3	8	41	14
Oklahoma	801	2,217	2,164	2,476	1,998	175	186	110	99	93	145	86	91	9	20	695	289
Texas	709	4,507	4,077	1,802	1,378	68	4	1	10	65	100	(1)	60	61	55	423	531
Tennessee	694	810	564	186	371	2	4	4	54	(1)	1	3	2	90	128	25	58
Michigan	332	276	186	82	40	4	5	1	4	4	2	3	1	1	1	8	6
Montana	271	1,500	2,096	1,738	1,773	161	136	37	10	7	5	27	25	(1)	61	696	578
Arkansas	256	372	315	117	177	21	21	16	21	8	12	12	6	4	4	31	21
New York	247	335	339	385	837	53	44	24	59	114	126	77	69	45	143	78	5
Mississippi	169	94	49	12	3	1	(1)	1	(1)	(1)	(1)	1	(1)	(1)	(1)	(1)	
Idaho	69	40	75	131	26	24	1	(1)								1	(1)
Colorado	63	80	169	390	222	11	9	5	1	1	6	4	2		1	105	77
Wyoming	17	39	109	81	98	10	10	4								19	55
Other States	173	182	260	179	194	6	7	17	4	2	9	36	33	32	25	11	12
Canada	28	30		141	371	25											346
Total	73,661	90,273	88,464	72,086	77,632	6,360	3,159	2,383	1,792	1,805	2,105	2,154	2,607	2,897	6,397	22,863	23,110

NEW YORK

Illinois	40,911	48,267	57,246	45,861	32,890	2,925	2,769	2,783	2,417	2,780	2,542	2,673	1,886	1,193	2,105	3,741	5,126
Indiana	17,021	15,814	14,886	15,215	12,918	877	810	1,026	942	1,054	893	873	712	673	1,127	1,943	1,968
Iowa	15,854	19,520	18,775	18,776	29,840	1,904	1,616	1,090	782	705	1,770	1,530	1,781	2,439	4,161	6,227	5,835
Missouri	10,522	14,630	18,629	17,148	19,146	961	677	628	386	882	1,362	1,405	1,986	2,303	2,351	3,014	3,191
Kansas	10,174	15,151	8,429	11,379	20,757	1,676	1,195	697	762	1,109	2,004	1,432	1,976	2,761	2,332	2,584	2,229
Texas	5,296	7,206	12,108	6,665	10,059	213	261	145	99	229	287	160	211	102	62	4,071	4,219
Ohio	5,113	4,131	4,337	4,352	3,298	154	68	94	51	57	17	60	179	114	446	954	1,104
Minnesota	4,412	6,382	9,143	9,372	11,840	967	681	507	219	277	625	606	846	1,106	1,348	2,351	2,307
Tennessee	3,964	3,445	4,070	2,773	3,531	105	117	155	163	163	216	209	386	470	254	646	647
Kentucky	3,873	5,524	5,082	4,361	4,497	147	272	469	271	533	312	303	399	418	418	604	351
New York	3,572	3,062	3,119	11,459	12,966	274	408	920	845	1,539	2,269	2,259	1,940	925	949	524	114
Nebraska	2,515	3,036	4,610	4,268	6,979	983	521	371	330	511	707	373	425	414	630	700	1,014
Oklahoma	2,254	2,764	2,553	3,105	6,336	458	361	386	423	368	433	476	465	583	282	1,166	935
Virginia	1,904	1,956	2,588	1,899	2,299	62	44	5	5	47	73	154	310	331	359	490	419
Michigan	1,901	1,683	1,399	702	952	64	62	39	19	47	23	31	35	124	99	178	296
Wisconsin	1,503	2,364	2,862	3,058	2,787	188	82	52	2	24	145	248	303	364	234	742	408
New Jersey	1,395	1,552	1,661	1,303	1,298	323	140	80	37	140	35	43	30	36	56	134	244
Maryland	1,226	860	959	1,021	396	91	28	26	28	20	42	46	56	50	68	187	254
Pennsylvania	1,220	1,085	1,148	922	911	41	30	63	60	56	63	75	65	77	74	92	215
South Dakota	976	1,140	1,299	1,795	2,970	358	156	72	51	34	69	104	248	236	396	531	715
Massachusetts	848	632	1,408	1,146	461	78	6	21	23	6	(1)	32	29	5	76	28	157
California	649	1,061	528	459	605	13	92	110	137	17	3	107	8	41	34	10	83
North Dakota	163	769	515	668	1,056	56	31	13	2					118	107	267	462
Arkansas	129	326	(2)	760	788	41	31	15	50	7	43	79	119	97	97	101	108
Delaware	109	64	84	91	65	6	4	3	3	3	3	17	4	5	2	4	11
Colorado	(2)	(2)	530	434	600	42	8	2	1							181	366
Washington	(2)	238	173	205	673				27	26	98	248	200	74			
Idaho	(2)	(2)	242	176	416		28	116								272	
Montana	(2)	(2)	203	123	120	1	43	1								1	74
Other States	503	814	601	462	843	45	32	33	113	10	7	12	10	9	62	186	325
Canada	203	532	175	279	98	25	73			(1)							
Total	138,212	163,948	179,362	170,257	192,895	13,078	10,646	9,921	8,248	10,594	14,[illegible]1	13,555	14,609	15,068	18,129	31,924	3[illegible],082

1 Not over 500 pounds.

2 Included in other States.

TABLE 480.—*Poultry, dressed: Receipts, gross weight at six markets, by State of origin, 1922–1926*—Continued

PHILADELPHIA

[Thousand pounds—i. e., 000 omitted]

State	1922	1923	1924	1925	1926												
					Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois	7, 165	9, 498	9, 456	8, 728	5, 505	754	388	490	563	216	271	190	330	437	237	647	982
Virginia	2, 241	2, 587	2, 448	2, 331	1, 745	107	80	105	70	60	69	61	52	68	75	484	514
Indiana	1, 907	1, 762	1, 231	1, 750	3, 659	261	132	193	174	243	316	347	401	271	260	551	510
Pennsylvania	1, 372	1, 260	919	901	805	44	49	53	40	35	52	56	45	70	53	153	155
Minnesota	1, 274	2, 389	2, 252	2, 732	3, 796	315	158	127	32	46	213	283	388	351	260	703	920
Ohio	1, 153	820	1, 206	741	507	62	50	27	32	12	11	(1)		62	30	86	135
Missouri	1, 088	522	1, 002	2, 315	2, 035	124	90	119	73	94	100	98	115	227	250	385	360
Iowa	1, 017	1, 124	1, 883	2, 700	3, 536	349	161	154	130	58	98	147	257	402	585	684	511
West Virginia	985	957	982	1, 034	797	46	41	55	45	33	43	35	25	39	38	150	247
Kansas	660	655	932	910	885	163	45	81	26	69	58	66	71	55	61	135	55
New York	424	368	1, 047	676	852	101	85	33		96		106	24	81	24	72	230
Wisconsin	396	406	268	697	787	70	1	3			43	78	59	13	102	182	236
Oklahoma	321	446	880	1, 302	2, 474	213	270	350	317	286	289	223	107	120	44	193	62
Delaware	262	138	77	77	47	4	2		3	3	4	2	2	2	1	13	11
Texas	213	130	798	303	1, 208		72	102	106	48	84	41	19	20	20	140	556
Maryland	201	256	162	233	181	11	13	12	42	7	10	6	11	7	8	23	31
Nebraska	167	298	453	377	1, 354	199	103	231	46	24	64	68	97	72	72	118	260
Michigan	142	36	39	256	36	1	6						20				9
Kentucky	81	68	459	171	105		22		5		7					7	64
New Jersey	63	71	227	15	107									54			53
South Dakota	45	16	17	321	88	2	2	(1)								15	69
North Dakota	4	650	595	436	427	13	15	32	8	2		20				139	198
Other States	138	154	307	289	1, 190	67	6	36	5	42	26	26	16	1	3	36	926
Total	21, 319	24, 611	27, 640	29, 295	32, 126	2, 906	1, 791	2, 203	1, 717	1, 374	1, 758	1, 853	2, 039	2, 352	2, 123	4, 916	7, 094

SAN FRANCISCO

California	3,397	4,178	4,178	2,708	2,907	340	482	104	53	83	162	160	104	86	59	494	780
Kansas	496	349	459	648	476	63		54	42			25		26	32	73	161
Oregon	280	278	414	464	495	8	1		9		15		37	38	73	170	144
Washington	149	339	339	268	260	37	29				2		1	5	3	135	48
Illinois	102	255	164	147	93		45		48								
Nevada	57	175	250	58	135											72	63
Idaho	(1)	218	336	633	1,280	84	86	43	6	30	26	41	17	98	200	319	330
Other States	485	121	313	689	732	112	42	94	1	32	7	25	72	48	1	134	164
Total	4,966	5,913	6,453	5,615	6,378	644	685	295	159	145	212	251	231	301	368	1,397	1,690

LOS ANGELES

Kansas				1,033	1,032	62	35	104	51	28	20	51	36	51	169	136	289
California				623	603	119	47	12	4	22	5	11	72	38	3	93	177
Oklahoma				526	263	77	(1)	55	1	25	4	26	22	3	1	25	24
Idaho				515	871	72	27	17	28	14	19	82		48	109	139	316
Texas				465	372	2	27	26	(1)	3	2	44			(1)	235	33
Utah				261	294	24	7	2	(1)		1	9	10	1		172	68
Nebraska				192	176		32	(1)	35	1			38		(1)	26	44
Arizona				170	94	1	4	1	(1)							19	69
Oregon				161	204	1	3	5	13	11	17	4	5	14		50	81
New Mexico				155	148	8	10	10	3	9	7	4	4	4	6	31	52
Wyoming				113	29												29
Colorado				104	99	1	1	1		2	(1)					44	50
New York				90	31	3	14			4	10					(1)	
Montana				86	215					(1)	1		24				190
Wisconsin				73	31	31											
Illinois				69	115			32					83				
Nevada				60	76	5	4	1	(1)					19		15	32
Iowa				44	30					6							24
Washington				36	147	(1)	4	34	5		26	8	(1)	20	50		
Other States				25	91	1		4		1	2		27				56
Canada					26		26										
Total				4,801	4,947	407	241	304	140	126	114	239	321	198	338	965	1,534

Division of Statistical and Historical Research. Compiled from reports of the Division of Dairy and Poultry Products.

[1] Not over 500 pounds.

TABLE 481.—*Frozen poultry: Cold-storage holdings, United States, 1916–1926*

[Thousand pounds—i. e., 000 omitted]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
Average:												
1916–1920					44, 660	35, 186	31, 613	28, 572	28, 451	30, 003	38, 313	50, 346
1921–1925	102, 063	108, 750	101, 045	82, 066	61, 570	47, 742	40, 930	36, 051	32, 730	33, 829	42, 881	70, 979
1916					17, 847	6, 559	6, 216	7, 032	8, 882	20, 041	31, 175	27, 139
1917	32, 184	35, 601	27, 796	25, 988	67, 242	64, 286	60, 194	54, 132	56, 093	46, 787	51, 743	49, 561
1918	64, 557	68, 238	56, 950	44, 115	26, 523	18, 929	17, 652	18, 756	23, 034	29, 798	44, 433	71, 238
1919	108, 722	119, 675	109, 627	92, 897	71, 162	55, 616	49, 212	40, 573	32, 918	30, 492	33, 139	54, 749
1920	87, 512	92, 253	78, 421	61, 436	40, 525	30, 535	24, 790	22, 364	21, 331	22, 953	31, 070	49, 046
1921	79, 025	81, 096	79, 001	62, 315	47, 651	35, 408	27, 268	21, 188	20, 064	25, 602	34, 876	65, 167
1922	103, 697	103, 350	88, 709	68, 471	50, 840	38, 602	34, 837	30, 659	27, 671	25, 984	30, 238	51, 781
1923	100, 170	121, 662	113, 503	94, 872	74, 562	57, 274	49, 100	41, 250	34, 131	33, 142	40, 363	63, 274
1924	93, 434	99, 486	93, 497	76, 067	52, 008	39, 299	34, 886	33, 604	33, 837	40, 070	55, 139	87, 939
1925	133, 990	138, 189	130, 513	108, 608	82, 732	68, 126	58, 562	53, 558	47, 946	44, 845	53, 787	86, 733
1926	111, 501	108, 512	95, 397	73, 124	52, 783	42, 808	36, 730	35, 793	38, 634	44, 771	64, 842	106, 854

Cold Storage Report Section.

TABLE 482.—*Chickens: Estimated price per pound, received by producers, United States, 1910–1926*

Year beginning July—	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	June 15	Weighted average
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1910–1913	11. 9	11. 8	11. 7	11. 6	10. 8	10. 6	10. 7	11. 0	11. 3	11. 6	11. 7	11. 8	11. 2
1914–1920	19. 4	18. 9	19. 0	18. 1	17. 2	16. 9	17. 4	18. 4	19. 0	19. 9	20. 0	20. 1	18. 1
1921–1925	20. 9	20. 2	19. 7	19. 1	18. 2	17. 9	18. 6	19. 3	19. 8	20. 8	21. 3	21. 4	19. 1
1910	12. 2	12. 0	11. 8	11. 4	11. 0	10. 6	10. 6	10. 6	10. 7	10. 9	11. 0	11. 1	11. 0
1911	11. 2	11. 2	11. 0	10. 8	10. 0	9. 7	10. 0	10. 4	10. 6	11. 0	11. 1	11. 0	10. 4
1912	11. 2	11. 3	11. 4	11. 4	11. 0	10. 8	10. 8	11. 0	11. 4	11. 7	11. 9	12. 0	11. 2
1913	13. 0	12. 8	12. 7	13. 0	11. 4	11. 3	11. 5	12. 0	12. 4	13. 0	12. 7	13. 1	12. 0
1914	13. 4	13. 1	12. 8	12. 0	11. 1	10. 7	10. 9	11. 3	11. 7	11. 9	12. 0	12. 2	11. 5
1915	12. 2	12. 2	12. 0	11. 8	11. 5	11. 2	11. 5	12. 1	12. 5	13. 1	13. 6	14. 0	12. 0
1916	14. 1	14. 1	14. 2	14. 4	13. 9	13. 6	14. 1	15. 1	15. 7	17. 3	17. 5	17. 7	14. 6
1917	17. 4	16. 7	18. 4	18. 5	17. 0	17. 5	18. 4	20. 3	20. 2	20. 7	20. 6	21. 3	18. 4
1918	23. 2	23. 4	23. 6	22. 2	21. 7	22. 4	22. 1	21. 8	23. 4	25. 7	26. 7	26. 4	23. 0
1919	26. 8	26. 1	25. 0	23. 3	22. 0	22. 0	23. 3	25. 7	26. 9	28. 4	28. 0	27. 4	24. 2
1920	28. 4	26. 6	26. 9	24. 6	22. 9	20. 6	21. 7	22. 3	22. 8	22. 2	21. 8	21. 5	22. 8
1921	21. 7	21. 4	20. 2	19. 1	18. 6	18. 2	18. 9	19. 0	19. 4	20. 0	20. 2	20. 6	19. 3
1922	20. 7	18. 9	18. 6	18. 1	17. 2	17. 2	17. 3	18. 6	18. 8	19. 4	20. 1	20. 3	18. 2
1923	20. 6	19. 8	19. 7	19. 0	17. 7	16. 6	17. 5	18. 2	18. 0	19. 4	20. 3	20. 5	18. 3
1924	20. 2	20. 0	19. 8	19. 4	18. 5	17. 9	18. 5	19. 1	20. 0	21. 1	22. 0	21. 6	19. 2
1925	21. 4	20. 8	20. 4	20. 0	19. 2	19. 5	20. 9	21. 5	21. 9	23. 1	23. 7	23. 9	20. 7
1926	23. 6	22. 1	21. 4	20. 8	20. 0	19. 8							

Division of Crop and Livestock Estimates.

TABLE 483.—*Turkeys: Estimated price per pound, received by producers, United States, 1912–1926*

Year beginning October—	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Year beginning October—	Oct. 15	Nov. 15	Dec. 15	Jan. 15
	Cents	*Cents*	*Cents*	*Cents*		*Cents*	*Cents*	*Cents*	*Cents*
1912	13. 6	14. 4	14. 8	14. 9	1920	30. 0	31. 8	33. 1	33. 0
1913	14. 6	15. 2	15. 5	15. 5	1921	25. 7	28. 2	32. 5	30. 7
1914	14. 1	14. 1	14. 5	14. 5	1922	25. 1	29. 5	32. 3	29. 7
1915	13. 7	14. 8	15. 5	15. 6	1923	26. 6	27. 9	24. 5	23. 1
1916	17. 0	18. 6	19. 6	19. 5	1924	23. 3	24. 2	25. 8	26. 2
1917	20. 0	21. 0	23. 0	22. 9	1925	24. 0	28. 3	31. 1	31. 7
1918	23. 9	26. 7	27. 0	27. 8	1926	26. 6	29. 8	32. 8	31. 6
1919	26. 6	28. 3	31. 1	32. 0					

Division of Crop and Livestock Estimates.

TABLE 484.—*Eggs: Receipts, at five markets, 1917–1926*

[Thousand cases—i. e., 000 omitted]

BOSTON

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	87	121	214	326	327	209	148	123	95	101	64	65	1,880
1917	56	75	171	252	318	193	113	87	84	80	43	30	1,502
1918	31	59	192	309	305	171	133	119	91	96	46	52	1,604
1919	67	116	184	327	235	189	148	128	80	97	48	40	1,659
1920	72	113	149	253	384	204	119	110	95	66	49	34	1,648
1921	84	138	206	359	294	183	137	130	100	88	52	52	1,823
1922	101	133	214	403	312	224	143	105	85	106	74	70	1,970
1923	99	106	244	285	381	219	128	131	101	108	73	69	1,944
1924	91	97	185	282	367	212	163	121	85	90	64	72	1,829
1925	61	129	222	303	282	206	169	126	102	112	58	63	1,833
1926	109	119	189	205	272	240	155	135	113	91	77	97	1,808

NEW YORK

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	332	461	898	1,062	948	778	569	478	414	353	235	271	6,799
1917	143	139	405	747	738	565	395	337	333	284	169	102	4,357
1918	106	155	712	908	681	551	483	450	333	288	183	177	5,027
1919	214	486	667	1,026	911	669	532	438	377	318	192	178	6,008
1920	207	315	618	563	697	725	470	370	334	272	209	211	4,991
1921	314	476	999	1,012	742	681	525	517	440	362	251	260	6,579
1922	335	424	919	1,178	994	784	574	427	381	337	226	242	6,821
1923	386	447	981	924	1,163	796	596	528	416	377	270	272	7,156
1924	301	410	717	1,082	970	789	599	429	405	361	221	259	6,543
1925	325	550	872	1,115	871	838	550	490	427	328	208	320	6,894
1926	393	471	813	860	868	871	579	502	433	344	284	400	6,818

PHILADELPHIA

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	88	112	177	258	246	168	127	123	120	91	63	74	1,648
1918	------	------	112	164	190	164	147	107	102	112	63	56	1,217
1919	64	100	174	301	271	185	129	115	107	119	76	63	1,704
1920	76	81	120	164	242	180	107	116	118	81	57	54	1,396
1921	64	120	202	237	235	158	121	145	124	100	66	70	1,642
1922	109	113	192	316	273	142	126	124	108	76	60	64	1,703
1923	104	111	179	187	278	196	131	125	141	110	74	88	1,727
1924	88	96	152	270	249	158	139	117	108	90	50	78	1,595
1925	77	121	161	279	196	188	117	99	121	79	65	69	1,572
1926	113	109	158	183	213	194	125	106	143	83	66	73	1,566

CHICAGO

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	164	327	571	803	836	654	395	307	224	153	77	93	4,605
1917	118	86	376	927	1,200	897	626	450	361	295	193	150	5,679
1918	108	29	415	1,027	926	733	564	460	338	240	124	86	5,050
1919	101	253	458	1,024	915	707	401	275	220	125	51	27	4,617
1920	109	251	458	840	800	620	380	260	217	132	47	40	4,154
1921	133	356	679	750	684	460	297	258	201	137	86	114	4,155
1922	210	206	525	887	898	695	389	300	191	140	82	71	4,684
1923	198	308	619	775	943	763	424	332	276	191	84	96	5,009
1924	176	347	519	823	879	637	458	318	228	156	76	62	4,679
1925	102	329	514	781	775	715	406	327	226	143	58	122	4,498
1926	236	319	507	763	836	626	449	283	197	132	103	124	4,575

TABLE 484.—*Eggs: Receipts, at five markets, 1917–1926*—Continued

[Thousand cases—i. e., 000 omitted]

SAN FRANCISCO

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	58	59	96	98	88	81	70	60	51	48	44	49	801
1917	50	76	94	91	92	79	52	45	35	37	28	37	716
1918	53	81	80	93	83	71	51	39	34	27	26	29	667
1919	48	59	73	83	93	80	66	62	42	32	27	33	698
1920	44	55	102	114	80	76	67	55	42	43	36	43	757
1921	58	71	123	109	100	79	62	57	44	40	33	35	811
1922	54	59	102	118	106	81	72	63	51	45	42	45	838
1923	65	60	95	97	87	92	70	61	54	58	54	62	855
1924	58	56	81	82	79	75	72	57	50	51	46	53	760
1925	53	47	77	85	69	78	73	64	54	47	44	52	743
1926	55	52	74	75	72	77	78	56	47	49	51	58	744

TOTAL

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Av. 1921–1925	729	1,080	1,956	2,548	2,445	1,890	1,308	1,091	904	746	483	552	15.733
1919	494	1,014	1,556	2,761	2,425	1,890	1,276	1,018	826	691	394	341	14,686
1920	508	815	1,447	1,934	2,203	1,805	1,143	911	806	594	398	382	12,946
1921	653	1,161	2,209	2,467	2,055	1,561	1,142	1,107	909	727	488	531	15,010
1922	809	1,025	1,952	2.902	2,583	1,926	1,304	1,019	816	704	484	492	16,016
1923	852	1,032	2,118	2,268	2,852	2,066	1,349	1,180	988	844	555	587	16,691
1924	714	1,006	1,654	2,539	2,544	1,871	1,431	1,042	876	748	457	524	15,406
1925	618	1,176	1,846	2,563	2,193	2,025	1,315	1,106	930	709	433	626	15,540
1926	906	1,070	1,741	2,086	2,261	2,015	1,386	1,081	933	699	581	752	15,511

Division of Statistical and Historical Research. Compiled from reports of the Division of Dairy and Poultry Products.

TABLE 485.—*Case eggs: Cold-storage holdings, United States, 1915–1926*

[Thousand cases [1]—i. e., 000 omitted]

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
Average:												
1916–1920	1,202	256	23	248	2,560	5,251	6,630	6,849	6,472	5,645	4,272	2,466
1921–1925	1,117	203	27	1,030	4.346	7,475	9,147	9,513	9,070	7,790	5,668	3,315
1915	------	------	------	------	------	------	------	5,029	5.683	5,019	3,687	2,788
1916	1,508	458	35	264	2,327	4,593	5,574	6,060	5,600	4,868	3,985	2,146
1917	920	149	7	190	2,105	4,922	6,617	6,805	6,436	5,837	4,638	2,948
1918	1,300	200	20	344	2,957	5,499	6,554	6,568	6,265	5,360	3,812	2,071
1919	740	130	26	320	3,278	6,098	7,659	7,850	7,685	6,858	5,087	3,341
1920	1,542	342	29	122	2,135	5,143	6,747	6,872	6,372	5,295	3,838	1,824
1921	468	43	43	1,026	4,909	6,844	7,534	7,605	7,210	6,269	4,380	2,403
1922	889	179	13	950	4,648	8,056	9,811	10,161	9,608	7,924	5,726	3,257
1923	1,311	213	13	453	3,737	7,890	10,222	10,509	9,883	8,737	6,645	4,028
1924	1,927	500	44	579	3,503	6,875	8,685	9,267	8,778	7,409	5,267	3,102
1925	1,050	81	21	1,240	4,872	7,712	9,482	10,024	9,873	8,612	6,322	3,786
1926	1,683	578	77	872	3,735	7,236	9,133	9,845	9,573	8,048	5,888	3,215

Cold Storage Report Section.

[1] 30-dozen cases.

TABLE 486.—*Eggs: Receipts at six markets, by State of origin, 1922–1926*

[Thousand cases—i. e., 000 omitted]

BOSTON

State	1922	1923	1924	1925	1926 Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois	710	845	691	390	327	17	22	20	38	66	53	27	20	19	15	12	18
Indiana	320	233	185	156	163	7	6	14	25	29	28	16	12	10	6	5	5
Iowa	142	146	186	259	270	6	10	27	32	34	36	29	32	23	20	12	9
Minnesota	108	109	191	250	229	9	8	16	46	38	39	20	22	14	8	5	4
Ohio	108	87	75	39	52	3	2	2	4	6	5	6	7	7	4	2	4
Missouri	100	78	80	158	134	10	20	39	13	22	7	7	4	2	3	2	5
Maine	99	122	99	100	82	9	7	9	9	10	10	6	5	5	4	3	5
Kansas	83	61	57	174	182	19	15	24	9	16	16	11	8	16	14	17	17
Michigan	42	43	48	40	41	1	1	1	4	8	7	5	5	3	3	2	1
New York	40	36	37	28	31	2	2	1	2	3	6	3	1	2	3	3	3
New Hampshire	38	44	28	32	22	3	2	3	3	2	2	1	1	1	1	1	2
Vermont	37	36	25	27	18	2	1	2	1	2	3	2	1	1	1	1	1
Massachusetts	24	21	16	12	7	1	(1)	1	1	(1)	(1)	(1)	3	(1)	(1)	(1)	1
Nebraska	19	19	31	61	91	8	5	10	3	13	11	10	4	3	5	9	10
Other States	100	64	80	107	159	12	18	20	15	23	23	12	10	7	4	3	12
Total	1,970	1,944	1,829	1,833	1,808	109	119	189	205	272	246	155	135	113	91	77	97

CHICAGO

State	1922	1923	1924	1925	1926 Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Missouri	1,045	880	661	604	655	26	37	70	102	136	101	61	39	28	22	13	20
Iowa	843	996	892	888	875	38	52	75	164	181	12	92	55	45	31	17	15
Kansas	532	501	433	439	403	47	61	73	48	51	[illegible]	22	20	10	10	9	18
Wisconsin	474	584	592	473	485	26	21	26	79	109	81	60	34	26	10	5	8
Minnesota	462	610	644	573	618	19	21	50	110	132	105	72	46	33	16	8	6
South Dakota	405	551	595	564	514	10	20	62	103	85	79	66	45	25	12	5	2
Nebraska	352	359	465	511	464	27	61	65	69	60	65	49	23	16	10	9	7
Illinois	310	256	194	170	148	9	8	13	31	32	20	12	11	5	3	2	2
Oklahoma	103	101	72	87	70	8	14	26	7	7	2	(1)	(1)	(1)	------	(1)	6
North Dakota	23	33	46	42	53	2	3	3	13	15	6	5	3	2	1	(1)	(1)

[1] Not over 500 cases.

TABLE 486.—*Eggs: Receipts at six markets, by State of origin, 1922–1926*—Continued

[Thousand cases—i. e., 000 omitted]

CHICAGO—Continued

State	1922	1923	1924	1925	1926 Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Texas	22	49	25	14	13	(1)	2	8	2	(1)				(1)		1	(1)
Michigan	18	18	20	14	13	1	1	1	1	1	1	1	1	2	1	1	1
Arkansas	14	20	3	15	23	(1)	3	8	5	5		(1)			1	(1)	1
Other States	81	51	37	104	193	20	10	17	21	16	15	4	3	4	14	32	37
Parcel post					48	3	5	7	8	6	5	5	3	3	1	1	1
Total	4,684	5,009	4,679	4,498	4,575	236	319	507	763	836	626	449	283	197	132	103	124

NEW YORK

State	1922	1923	1924	1925	1926 Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois	1,379	1,342	1,223	1,258	939	42	64	128	138	136	125	81	68	53	39	25	40
Iowa	921	934	942	924	1,102	16	36	108	173	178	191	127	115	72	50	19	17
Indiana	726	575	526	568	542	24	29	68	79	82	85	51	45	31	20	12	16
Ohio	514	436	327	324	394	9	9	31	52	71	76	46	37	31	19	7	6
New York	491	645	615	688	637	39	43	49	80	99	95	62	42	38	25	20	45
Missouri	438	453	415	364	351	22	30	59	49	47	38	16	16	23	18	8	25
California	354	430	331	456	439	45	55	48	22	16	26	23	20	39	44	44	57
Pennsylvania	265	238	274	244	240	20	20	23	29	32	29	24	21	15	10	7	10
Tennessee	251	249	141	189	120	8	19	42	13	9	4	4	2	2	4	3	10
Kansas	222	242	181	197	237	18	19	37	29	21	23	18	20	19	13	9	11
Minnesota	217	264	261	246	201	7	5	19	25	24	36	22	21	20	9	4	9
Washington	143	271	254	375	543	62	53	41	26	26	27	29	29	38	49	74	89
Kentucky	143	103	61	74	69	4	8	18	13	5	6	2	4	1	3	1	4
New Jersey	134	199	222	216	213	17	19	23	27	27	19	17	15	12	11	14	12
Michigan	100	107	97	70	56	4	2	1	7	9	8	5	5	3	2	3	7
Maryland	84	124	124	118	118	8	9	17	18	16	13	11	8	6	4	3	5
Virginia	65	99	104	92	80	4	6	15	17	13	6	5	5	3	2	2	2
Wisconsin	54	54	68	90	78	3	2	6	11	11	15	9	8	4	2	4	3
Delaware	52	63	82	80	80	4	6	10	13	12	9	8	6	4	2	3	3
Nebraska	38	55	57	56	55	2	2	4	6	7	12	4	2	5	3	3	5
Other States	230	273	238	265	282	32	32	61	28	22	23	11	10	11	13	17	22
Parcel post					42	3	3	5	5	5	5	4	3	3	2	2	2
Total	6,821	7,156	6,543	6,894	6,818	393	471	813	860	868	871	579	502	433	344	284	400

PHILADELPHIA																	
Illinois	274	312	304	264	189	28	29	17	16	24	20	11	7	14	8	9	6
Missouri	152	147	134	131	260	22	15	31	30	26	22	12	20	34	20	10	18
Indiana	149	125	103	98	113	4	3	5	17	19	17	16	11	12	4	3	2
Ohio	149	100	103	129	100	2	3	9	12	10	21	12	9	9	7	3	3
Pennsylvania	147	174	155	133	109	9	10	13	16	17	11	7	6	7	4	2	7
Michigan	145	163	148	123	113	(1)	(1)	2	9	28	26	17	8	8	2	10	3
Virginia	144	149	153	120	99	4	5	15	16	18	11	8	6	4	4	4	4
Iowa	71	80	106	109	105	3	5	9	14	17	14	11	11	11	4	3	3
Maryland	68	66	58	55	38	3	3	6	7	6	3	2	2	2	1	1	2
Minnesota	63	75	84	113	104	6	6	4	12	12	18		13	22	9	1	1
Tennessee	61	25	12	27	15	1	1	4	2	1		(1)	(1)	(1)	2	2	2
Kansas	48	70	45	43	68	7	10	12	7	5	6	1	2	6	5	3	4
Delaware	46	53	46	35	23	1	2	3	4	4	3	1	1	1	1	1	1
Wisconsin	29	34	34	37	53	1	1	1	8	10	6	6	5	6	2	2	5
West Virginia	27	26	21	17	9	1		1	1	1	1	1		1	1		1
New York	17	35	26	29	19	6	1	1	1	(1)		1	(1)	1	2	3	3
Nebraska	15	36	15	17	46	6	10	11	3	2	7	1	2	(1)	1	1	2
Other States	98	57	48	92	103	9	5	14	8	13	8	18	3	5	6	8	6
Total	1,703	1,727	1,595	1,572	1,566	113	109	158	183	213	194	125	106	143	83	66	73
SAN FRANCISCO																	
California	824	825	737	686	710	50	50	70	69	71	74	73	53	44	48	51	57
Oregon	7	13	10	37	16	2	1	1	2	1	1	3	2	2	1	(1)	(1)
Washington	6	10	6	11	6	3	(1)	(1)	1	(1)	1			(1)	(1)	(1)	1
Idaho	1	6	3	6	10	(1)	1	3	3	(1)	(1)	1	1	1	(1)	(1)	(1)
Other States		1	4	3	2	(1)	(1)	(1)			1	1	(1)	(1)			
Total	838	855	760	743	744	55	52	74	75	72	77	78	56	47	49	51	58
LOS ANGELES																	
California				456	446	25	33	60	60	72	55	46	31	19	14	14	17
Idaho				62	56	1	4	3	4	16	12	8	5	2	1	(1)	(1)
Oregon				24	19	1	1	1	1	4	4	6	1	(1)		(1)	
Utah				16	26	1	(1)	1	6	7	6	3	1	1	(1)	(1)	(1)
Other States				17	13		1	1	(1)	2	4	2	1	(1)	1	(1)	1
Total				575	560	28	39	66	71	101	81	65	39	22	16	14	18

Division of Statistical and Historical Research. Compiled from reports of the Division of Dairy and Poultry Products.

[1] Not over 500 cases.

TABLE 487.—*Eggs: Estimated price per dozen, received by producers, United States, 1910–1926*

Year beginning April	Apr. 15	May 15	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Weighted av.
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1910–1913	16.7	16.6	16.5	16.5	17.7	20.4	23.9	28.1	30.0	27.5	23.1	19.2	19.0
1914–1920	26.0	27.0	26.2	27.3	29.5	33.6	38.2	43.9	49.0	45.5	34.8	27.4	30.1
1921–1925	21.1	21.3	21.7	23.3	25.8	30.2	36.9	48.4	48.4	38.0	31.9	22.7	25.9
1910	18.6	18.4	18.2	17.9	18.5	20.9	23.8	27.2	29.7	26.2	19.3	15.7	19.3
1911	14.8	14.6	14.4	14.8	16.4	18.7	21.8	26.1	29.1	29.3	26.8	21.2	18.2
1912	17.4	16.9	16.7	17.0	18.2	20.6	24.0	27.8	28.2	24.8	21.1	17.9	18.9
1913	15.9	16.5	16.8	16.4	17.7	21.3	26.0	31.3	32.9	29.8	25.3	22.2	19.8
1914	16.4	16.9	17.2	17.5	19.1	22.5	23.7	28.2	31.9	31.7	23.7	16.5	19.3
1915	16.6	16.5	16.1	16.3	17.3	20.6	24.6	29.4	31.1	28.8	24.2	18.2	19.0
1916	17.7	18.5	18.9	19.9	21.6	25.3	30.4	34.9	38.3	38.1	35.7	25.3	23.3
1917	28.5	30.2	29.9	29.0	30.5	35.8	38.5	41.2	45.9	48.9	45.8	30.9	33.0
1918	30.4	30.6	29.5	33.0	35.2	39.1	44.9	51.7	59.3	55.3	34.8	33.9	34.9
1919	36.0	38.9	36.1	37.9	40.6	43.1	51.0	59.1	69.6	60.9	48.5	40.5	41.8
1920	36.6	37.5	35.9	37.8	42.5	48.6	54.6	62.9	67.1	54.5	31.0	26.8	39.3
1921	20.5	19.4	20.1	24.3	28.9	30.9	39.4	50.0	51.1	31.7	31.4	19.5	25.3
1922	20.0	20.9	20.2	20.3	20.6	27.3	34.6	43.6	47.2	37.8	29.9	25.4	24.7
1923	21.6	21.8	20.9	21.3	23.6	29.8	34.6	45.6	45.5	35.4	33.6	20.4	25.2
1924	19.1	19.8	21.1	22.8	26.1	31.8	38.2	45.8	49.9	48.6	35.7	23.9	26.1
1925	24.2	24.8	26.1	27.9	30.0	31.1	37.7	46.8	48.1	36.3	28.9	24.1	28.3
1926	24.8	25.2	25.7	25.7	26.4	31.5	36.8	44.9	47.6				

Division of Crop and Livestock Estimates.

TABLE 488.—*Eggs in the shell: International trade, average 1909–1913, annual 1923–1925*

[Thousand dozen—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Argentina	2,351		1,903	2,595	3,003	4,555	6,321	3,585
Austria			9,564	26	17,203		16,400	
Austria-Hungary	91,561	177,163						
Bulgaria	55	16,512	(1)	5,911	3	13,605		16,219
China	270	25,542	788	91,754	847	78,688		65,376
Denmark	2,243	34,340	578	66,603	1,215	69,374	473	67,225
Egypt	[2] 101	9,690	32	13,046	14	17,140	11	13,174
Estonia			3	523	13	943	(1)	1,426
Finland	2,890	3	228	35	113	58	54	114
Hungary			5	5,175	16	8,825	310	21,010
Irish Free State					628	42,728	611	43,592
Italy	4,104	33,482	3,621	13,173	4,005	38,345	6,872	44,612
Lithuania						7,060		5,415
Morocco		[3] 5,653		12,851		15,785		15,654
Netherlands	19,542	29,360	964	19,874	6,839	49,386	7,410	66,406
Poland			(1)	13,005	820	15,317	1,302	39,787
Rumania	18	12,323	4	2,882	(1)	11,757	(1)	15,891
Union of South Africa	1,382	[4] 90	66	14,250	71	19,207	184	20,732
United States	[3] 1,701	12,108	412	30,659	383	28,117	609	24,999

[1] Less than 500 dozen. [2] One year only. [3] Two-year average. [4] Four-year average.

TABLE 488.—*Eggs in the shell: International trade, average 1909–1913, annual 1923–1925*—Continued

[Thousand dozen—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL IMPORTING COUNTRIES								
Belgium	19,148	11,521	5,458	5,365	2,689	13,837	2,901	17,999
Canada	6,341	148	6,623	2,900	4,981	2,717	2,722	2,466
Cuba	4,732		11,075		13,019			
Czechoslovakia			1,854	15	1,779	10	1,944	
France	37,215	8,920	22,610	23,994	9,498	4,494	9,464	6,625
Germany	228,279	675	1,150	93	104,471	705	203,045	1,547
Japan	6,867		46,168		38,157		33,774	
Norway	387	4	1,828	6	92	[illegible],092	127	1,129
Philippine Islands	4,315		4,809		5,108		5,754	
Spain	7,404	618	16,532	(1)	22,706	3	19,048	15
Sweden	4,207	3,781	3,101	1,135	2,861	1,057	949	1,153
Switzerland	19,747	48	17,623	2	16,874	12	17,337	10
United Kingdom	190,015		200,003	349	200,079	628	216,828	713
Other countries			1,105	156	2,902	5,762	5,254	5,976
Total	654,884	381,981	358,107	326,377	460,389	451,207	559,764	502,910

Division of Statistical and Historical Research. Compiled from official sources.

[1] Less than 500 dozen.

TABLE 489.—*Eggs, not in the shell: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Austria-Hungary	1,100	188						
China		17,217		100,387		94,712		133,558
PRINCIPAL IMPORTING COUNTRIES								
Belgium	(1)	(1)	(1)	(1)	220	27	974	105
Canada	(2)	(2)	(2)	(2)	741		1,507	
Denmark	526	[3] 6	674	3	782	20	780	16
France	1,967	426	4,883	43	4,752	83	4,548	81
Germany	11,214	3,225	6,417	1,350	10,254	1,606	13,958	1,989
Irish Free State					1,006	88	1,091	19
Italy	381	4	949	1	1,348	12	1,291	19
Netherlands			2,833	3,582	5,485	5,593	5,860	7,815
Sweden	[4] 255	(5)	527	(5)	560	7		2
United Kingdom	(1)	(1)	51,060	619	48,461	653	53,599	913
United States	[6] 394	(2)	23,299	328	19,722	505	33,987	301
Other countries	2		262	12	200	44	201	15
Total	15,839	21,066	90,904	106,325	93,531	108,350	117,796	144,833

Division of Statistical and Historical Research. Compiled from official sources.

[1] Not separately stated.
[2] Stated in value only.
[3] Three-year average.
[4] Two-year average.
[5] Less than 500 pounds.
[6] Four-year average.

Table 490.—*Eggs: Average price per dozen at certain cities, 1910–1926*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
FRESH FIRSTS AT NEW YORK													
Average:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1914–1920	49	41	33	31	32	31	33	36	40	44	53	57	40
1921–1925	50	40	28	27	27	27	29	31	38	44	54	52	37
1910	38	27	23	22	21	20	18	21	24	26	31	34	25
1911	28	19	17	17	17	15	17	18	21	24	32	35	22
1912	34	36	22	20	19	19	20	21	24	26	31	29	25
1913	24	22	19	19	20	19	19	23	27	29	39	36	25
1914	33	29	26	20	20	21	21	24	26	27	35	38	27
1915	38	26	20	21	20	20	20	22	26	30	35	34	26
1916	31	26	22	22	22	23	25	29	33	34	41	46	30
1917	46	45	31	34	35	33	34	38	41	41	49	57	40
1918	65	58	38	35	35	36	41	43	47	53	65	67	49
1919	62	44	44	43	46	44	46	48	51	62	69	79	53
1920	71	59	48	44	44	43	47	51	57	64	77	78	57
1921	67	42	31	27	25	27	33	35	39	49	58	54	41
1922	41	38	25	26	27	25	24	26	30	43	53	53	35
1923	42	37	31	27	27	24	25	29	35	39	53	47	35
1924	42	39	25	24	25	27	29	33	39	44	52	57	36
1925	59	44	30	29	32	33	33	33	37	43	56	51	40
1926	38	31	29	32	31	30	29	31	38	40	50	48	36
FRESH FIRSTS AT CHICAGO													
Average:													
1914–1920	45	37	29	29	30	28	30	32	36	40	47	51	36
1921–1925	46	35	25	24	25	25	26	28	33	39	50	47	34
1910	34	26	21	20	19	18	16	18	22	24	28	30	23
1911	26	18	16	15	15	13	14	16	18	21	28	20	19
1912	33	32	21	19	18	17	18	19	22	24	26	25	23
1913	24	21	18	18	18	18	17	21	24	26	33	33	23
1914	32	27	22	18	19	18	19	21	22	23	28	32	23
1915	34	25	18	19	18	17	17	19	23	26	29	29	23
1916	29	24	19	20	21	21	22	24	28	31	36	39	26
1917	41	42	28	32	34	31	32	34	37	37	43	48	37
1918	58	51	35	33	32	32	37	38	43	50	61	62	44
1919	58	38	39	40	43	40	42	42	46	57	63	73	48
1920	65	52	45	41	41	39	42	47	53	57	68	71	52
1921	60	35	27	24	22	24	28	30	33	44	52	51	36
1922	37	32	23	23	24	22	21	22	29	35	48	48	30
1923	38	33	26	25	24	23	23	26	31	35	48	42	31
1924	41	35	22	22	24	25	26	30	36	41	48	52	34
1925	56	39	29	27	30	30	31	34	34	42	53	44	37
1926	36	29	27	29	29	28	27	29	36	40	48	44	34
1926													
Boston, western firsts	39	31	29	31	31	30	29	30	37	40	50	50	36
Philadelphia, western extra firsts	41	36	30	32	33	34	32	34	42	47	60	52	39
San Francisco, fresh extras	38	28	26	28	28	31	33	38	44	50	49	44	36

Division of Statistical and Historical Research. Average of daily prices from New York Journal of Commerce, Philadelphia Commercial List, Price Current and Chicago Dairy Produce; average of weekly prices in reports of the Boston Chamber of Commerce and Pacific Dairy Review. Earlier data for cities showing prices for 1926 only are available in 1925 Yearbook, p. 1224, Table 636.

SILK

TABLE 491.—*Raw silk: Production in specified countries, average 1909–1913, 1921–1925, annual 1919–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Average, 1909–1913	Average, 1921–1925	1919	1920	1921	1922	1923	1924	1925
WESTERN EUROPE									
Italy	8, 524	9, 486	4, 079	7, 330	7, 154	8, 234	10, 803	11, 585	9, 656
France	992	548	408	551	430	437	562	739	573
Spain	182	177	154	176	132	170	154	209	220
Total	9, 698	10, 211	4, 641	8, 057	7, 716	8, 841	11, 519	12, 533	10, 449
Eastern Europe, Levant, and Central Asia [1]	6, 611	1, 874	2, 039	1, 653	1, 213	1, 543	1, 675	2, 414	2, 524
FAR EAST									
China:									
Exports from Shanghai	12, 576	10, 456	8, 598	7, 859	8, 840	10, 648	9, 689	10, 505	12, 590
Exports from Canton	5, 146	6, 094	5, 071	4, 167	5, 688	7, 000	5, 974	6, 504	5, 302
Japan:									
Exports from Yokohama	21, 898	46, 337	32, 188	24, 008	40, 984	41, 546	38, 107	54, 068	56, 978
British India:									
Exports from Bengal and Cashmere	428	121	220	176	187	165	110	77	66
Indo-China:									
Exports from Saigon, Haipong, etc	[2] 32	84	11	33	44	55	88	90	132
Total	40, 080	63, 092	46, 088	36, 243	55, 743	59, 414	53, 968	71, 253	75, 077
Grand total	56, 389	75, 177	52, 768	45, 953	64, 672	69, 798	67, 162	86, 200	88, 050

Division of Statistical and Historical Research. Compiled from Statistique de la Production de la Soie, Silk Merchants Union, Lyon, France.

[1] Includes Hungary, Czechoslovakia, Yugoslavia, Rumania, Bulgaria, Greece, Salonika, Adrianople, Crete, the Caucasus, Turkestan, Central Asia, and Persia.
[2] For years 1911–1913.

HONEY

TABLE 492.—*Honey: Monthly average prices in producing sections and at consuming markets, 1920–1926*

EXTRACTED HONEY, PER POUND

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
CALIFORNIA WHITE ORANGE												
F. o. b. Southern California shipping points: [1]	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1920	18¼	18¼	17¾	17¼	21	19¾	19½	19¼	18½	18¼	17¾	16¾
1921	16¼	13¾	13	12	11¼	11¼	9¼	10½	11	11¾	12¼	11½
1922	11½	11½	11	------	8½	9	9½	9½	9½	10¼	10¾	10¾
1923	10¾	10⅓	10¼	10¼	11¾	------	12	------	------	------	------	13¼
1924	13	------	14	14½	11¾	13¼	12	12½	13	13¼	14½	14¼
1925	14¼	------	15	------	13½	13	11¾	11¾	------	14½	15½	------
1926	12¼	11¾	11½	10½	9½	8¾	8¾	------	------	8½	------	------
New York City: [2]												
1920	20¾	18¾	17½	19¼	20	21¾	18	17¼	18¾	17	17	16¼
1921	17½	14¾	12¼	11	11½	12	11½	11	12¼	12½	12¾	12¾
1922	13½	13	13¼	12½	13	12	11¾	11¾	11¾	12	12½	12¾
1923	12¾	12¾	12¾	12¾	13	13½	13¾	13¾	14½	14	15	16
1924	15½	16	15	15½	15½	13½	14½	14	------	13¾	13½	------
1925	------	------	------	------	------	14¼	------	14½	14¼	13½	14	14½
1926	15¼	15	14½	------	------	------	11¼	11	11½	11¾	11¾	12½

[1] Price to beekeepers or other shippers in car lots to July, 1923; thereafter, price in large lots, mostly less than car lots.
[2] Sales by original receivers to bottlers, confectioners, bakers, and jobbers.

TABLE 492.—*Honey: Monthly average prices in producing sections and at consuming markets, 1920–1926*—Continued

EXTRACTED HONEY, PER POUND—Continued

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
INTERMOUNTAIN WHITE SWEET CLOVER AND ALFALFA												
F. o. b. Intermountain points: [3]	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1921	----	----	----	8¼	7¾	7½	7¼	7¾	7¾	7¾	8	8½
1922	8½	8½	8½	8½	8½	8¾	9¼	----	8	8	8	8
1923	7¾	8	7¼	7½	7½	7¾	8½	8¾	8	9	9	9
1924	9	9¼	9¼	9¼	9¼	9	8¾	9	9	9	9	9¼
1925	9½	9¼	9¼	9¼	9	----	8½	8½	8½	8½	8½	8½
1926	8	8¼	8	7¾	7½	7½	7½	7	6¾	6¾	6¾	6¾
Chicago: [2]												
1921	14¾	13¾	12	12¼	11¾	9¾	9¾	10¼	10	11	11	11¼
1922	11¼	11	10¾	10½	10¼	10¾	10¼	10	10	10¼	10¼	9½
1923	9½	9	10	10	10	10¼	10¼	10¼	10¾	11¼	11½	11¼
1924	11¼	11¼	11¼	11¼	11	----	----	10¾	11	11¼	11¼	11
1925	11	11	11	11¼	----	----	----	----	----	11	11	11
1926	10¾	10¼	10	9¾	10	9¾	----	9¾	9¾	9¼	----	----
WHITE CLOVER												
F. o. b. New York and North Central States: [4]												
1921	----	----	----	----	----	----	----	----	9¾	9¾	9¾	10¾
1922	10½	10	10¾	10¾	10½	11¼	11½	11	11	11	10¾	11
1923	11	10¾	10	10	10½	11	11	11¾	11¼	10¾	10¾	10¾
1924	10¾	10¾	10¾	11	11	10¾	10½	11	10¾	10¾	11¼	11
1925	11¼	11¼	11¼	11¼	11½	11½	11½	10¾	11	11	10¾	10½
1926	9¾	10	9¼	9¾	9	9½	10¼	10	9½	9½	10	9½
F. o. b. North Central States: Chicago: [2]												
1921	----	----	----	----	----	----	----	----	11¾	12½	12¼	12½
1922	11¾	11¾	11¼	11	11¼	12	----	----	10¼	11½	11½	10¼
1923	10	9¼	9½	9¾	10½	----	10½	10¾	11¼	11½	12½	11¾
1924	12¼	10¾	10¾	11	11¼	10½	10½	11¾	11½	12	12	12
1925	11¼	11¾	11½	11¼	11½	11¼	11¼	11	11	10¾	11½	11¼
1926	11¼	11	10½	9¾	9¾	9¾	[5] 8½	[5] 8¾	[5] 9¼	[5] 9½	[5] 9½	[5] 9¼
NORTHEASTERN BUCKWHEAT												
F. o. b. New York and Pennsylvania points: [4]												
1921	----	----	----	----	----	----	----	----	9	8¼	7½	8
1922	7	8	7½	7½	----	8	8½	6½	7¾	8	8	8
1923	7¾	8	8½	----	----	8	----	9	9	9¼	9	9
1924	9	9	8½	8¾	8½	8½	8¼	----	9	9¼	9	9
1925	8¾	9	10	9	----	----	----	9¼	9	8½	8½	8¾
1926	8	7¾	7½	7	6½	6½	6	6½	7	7	7	8

COMB HONEY, 24-SECTION CASES

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
WHITE CLOVER COMB, NO. 1 AND FANCY												
F. o. b. New York and North Central States: [4]	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
1921	----	----	----	----	----	----	----	----	5.10	5.00	5.10	4.65
1922	5.00	5.10	5.00	4.50	----	----	4.45	5.00	4.55	4.90	4.70	4.70
1923	4.75	4.75	----	----	4.00	----	5.00	5.00	5.25	5.10	4.75	5.15
1924	4.75	4.75	5.05	4.80	5.50	----	4.80	4.85	4.95	4.80	5.10	4.95
1925	4.95	4.95	4.75	4.90	5.25	4.50	5.10	5.20	5.00	5.00	4.65	4.45
1926	4.25	4.25	4.25	4.00	4.00	4.00	4.25	4.75	4.50	4.25	4.25	4.25
F. o. b. North Central States: Chicago: [6]												
1921	6.75	6.50	6.75	7.00	6.60	6.40	6.25	6.60	6.00	6.10	6.00	5.50
1922	5.25	5.25	----	4.75	----	5.10	----	----	4.10	4.50	4.25	4.50
1923	4.10	4.00	4.00	4.00	4.25	4.25	4.25	4.40	4.75	4.75	4.90	4.90
1924	4.90	4.75	4.60	5.00	4.75	4.60	4.75	5.00	5.10	5.00	4.90	4.75
1925	4.50	4.25	4.40	4.60	4.50	4.50	4.60	4.40	4.40	4.50	4.25	4.10
1926	[5] 4.10	[5] 4.00	[5] 4.00	[5] 3.75	[5] 3.65	[5] 3.60	4.10	4.10	4.10	4.25	4.40	[5] 4.40

Division of Fruits and Vegetables.

[3] Price to beekeepers and other shippers, in car lots.
[4] Price to beekeepers in large lots, mostly less than car lots.
[5] Midwestern, Mixed Clovers.
[6] Sales by original receivers to retailers.

BEESWAX

Table 493.—*Beeswax: Monthly average price per pound in producing sections and at Chicago, 1920–1926*

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
F. O. B. PRODUCING SECTIONS[1]												
Southern California (average yellow to light).	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1921	35	34	30	------	27	28	25	23½	21	21	23	22½
1922	------	22	22	------	22	22	22½	20	20	21	23½	23½
1923	26	27	27	28	28	27	------	------	------	------	21	22
1924	23	23½	23½	22	22½	22½	21	22½	23	24	23	24½
1925	26	27	28½	29½	29½	28	29	28	28	28½	30½	34½
1926	35	36½	37½	37½	35	35½	35	31½	33½	33	33	34
Intermountain region (average yellow to light):												
1921	35½	------	32	------	30	------	28	------	23	23	22	23½
1922	22	23	23	------	22	------	22½	20	20	22	22½	24
1923	25	26	26	25½	26	24½	24	25	24½	24½	24	24
1924	23½	23½	23½	23	22½	22½	22½	21½	20½	22½	22½	24
1925	25	25½	27	30	30	29½	30	28	[illegible]	30	32	34
1926	36	37	38	39	38½	36	34	32	31	------	34½	35½
Chicago:[2]												
Light—												
1920	44	41½	42¾	43¾	45¾	44	43¼	41	40	40¼	37	34¾
1921	31½	31¼	30½	31	32¼	31½	31¾	29	29	30¼	30¼	31
1922	31	31	29¾	28¾	33	31¼	31½	30¾	31	31½	31½	30½
1923	30¾	31½	32	32½	32	32	31	29	30	30	29	29½
1924	29¼	28½	29	31¼	28¾	27½	27	27	29	32½	32¼	33¼
1925	35	35	38	41¾	38	35	33½	33½	34	37¾	38	38
1926	------	40	------	------	------	------	39½	38½	38½	39½	39	39
Dark—												
1920	38½	36¼	39	40¾	42	40½	39½	37	35½	36½	34½	32¼
1921	29¼	28½	27¾	25¾	25¼	27¾	26¼	25¾	26½	27	27¼	27½
1922	28½	28	24½	25½	29	28	29	28	27¼	28	27¾	27¾
1923	28	28½	28½	28¾	29	29¼	28½	25½	25¼	26	26	24
1924	26	26¼	26	27	25¼	25½	25½	24½	26	29	28	27½
1925	31	31	33¾	36¾	34	29½	29½	29¾	29½	34½	34	34
1926	------	------	------	------	------	------	33	33	------	------	------	------

Division of Fruits and Vegetables.

[1] Price to beekeepers.
[2] Sales by original receivers to wholesalers, polish and laundry-supply manufacturers, etc.

FOREIGN TRADE OF THE UNITED STATES IN AGRICULTURAL PRODUCTS

Table 494.—*Value of principal groups of farm and forest products exported from and imported into the United States, 1924–1926*

[Thousand dollars—i. e., 000 omitted]

Article	Year ended June 30					
	Exports (domestic merchandise)			Imports		
	1924	1925	1926, preliminary	1924	1925	1926, preliminary
ANIMALS AND ANIMAL PRODUCTS						
Animals, live	5, 787	7, 547	6, 974	8, 799	9, 885	12, 189
Dairy products	28, 175	25, 633	20, 766	41, 650	30, 531	31, 456
Eggs and egg products	8, 734	7, 337	8, 236	7, 030	6, 846	9, 369
Hides and skins, raw (except fur)	10, 662	11, 744	10, 629	80, 818	92, 678	94, 287
Meats and meat products	296, 584	273, 207	254, 047	6, 922	7, 159	11, 411
Silk, unmanufactured				358, 792	361, 944	412, 914
Wool and mohair, unmanufactured	134	133	118	77, 729	124, 164	125, 494
Animal products, miscellaneous	8, 651	13, 479	14, 034	39, 318	39, 732	45, 350
Total animals and animal products	358, 727	339, 080	314, 804	621, 058	672, 939	742, 470
VEGETABLE PRODUCTS						
Chocolate and cocoa	709	607	573	29, 004	35, 720	42, 727
Coffee	5, 957	8, 285	9, 147	206, 519	267, 154	314, 125
Cotton, unmanufactured—						
Long staple				21, 142	20, 409	23, 421
Sea-island	61	170	343			
Other	145, 832	210, 519	165, 925			
Short staple	753, 289	843, 056	747, 922	22, 619	30, 231	26, 789
Linters	4, 793	7, 226	3, 530			
Total cotton, unmanufactured	903, 975	1, 060, 980	917, 720	43, 761	50, 640	50, 210
Fruits	84, 519	85, 313	105, 113	42, 059	48, 388	55, 230
Grains and grain products	246, 862	536, 427	264, 202	35, 562	25, 198	35, 423
Nuts	1, 174	1, 100	1, 289	25, 665	35, 134	31, 408
Oilseeds and oilseed products	27, 790	47, 736	41, 072	120, 372	131, 800	148, 706
Seeds, except oilseeds	2, 886	3, 602	3, 419	14, 174	10, 290	13, 196
Spices	199	236	204	14, 585	18, 698	17, 278
Sugar, molasses, and sirups	18, 346	23, 616	22, 797	380, 347	293, 885	232, 206
Tea				30, 020	28, 564	30, 874
Tobacco, unmanufactured	168, 076	131, 535	167, 251	59, 930	78, 657	60, 137
Vegetables	19, 222	17, 810	18, 987	22, 849	33, 676	39, 569
Vegetable products, miscellaneous	28, 656	24, 054	25, 139	71, 089	87, 840	104, 902
Total vegetable products	1, 508, 371	1, 941, 301	1, 576, 913	1, 095, 936	1, 145, 639	1, 175, 991
Total farm products	1, 867, 098	2, 280, 381	1, 891, 717	1, 716, 994	1, 818, 578	1, 918, 461
FOREST PRODUCTS						
Dyeing and tanning materials	1, 972	1, 937	1, 782	7, 575	7, 360	8, 150
Gums, resins, and balsams	22, 754	28, 511	33, 485	30, 403	29, 465	34, 170
Rubber and similar gums				157, 628	238, 041	609, 947
Wood	132, 121	119, 676	120, 923	104, 352	103, 393	108, 067
Forest products, miscellaneous	5, 527	6, 063	6, 551	74, 381	87, 205	88, 185
Total forest products	162, 374	156, 187	162, 741	374, 339	465, 464	848, 519
Total farm and forest products	2, 029, 472	2, 436, 568	2, 054, 458	2, 091, 333	2, 284, 042	2, 766, 980
	Shipments from the United States to Porto Rico			Shipments from Porto Rico to the United States		
ANIMALS AND ANIMAL PRODUCTS						
Animals, live	111	187	228			
Dairy products	1, 619	1, 425	1, 300			
Eggs	30	30	30			
Hides and skins, raw (except fur)				70	88	81
Meats and meat products	5, 897	6, 630	7, 320			
Animal products, miscellaneous	26	24	33	182	142	138
Total animals and animal products	7, 683	8, 296	8, 911	252	230	219

TABLE 494.—*Value of principal groups of farm and forest products exported from and imported into the United States, 1924–1926*—Continued

[Thousand dollars—i. e., 000 omitted]

Article	Year ended June 30					
	Shipments from the United States to Porto Rico			Shipments from Porto Rico to the United States		
	1924	1925	1926, preliminary	1924	1925	1926, preliminary
VEGETABLE PRODUCTS						
Chocolate and cocoa	193	175	203			
Coffee	1	1	7	71	67	170
Cotton, unmanufactured				182	243	257
Fruits	455	414	456	3,702	4,188	5,994
Grains and grain products	12,782	13,683	14,715			
Nuts	28	24	35	621	711	617
Oilseeds and oilseed products	372	360	417			
Seeds, except oilseeds	8	8	6	92	41	25
Sugar, molasses, and sirups	620	347	185	48,22[illegible]	54,555	49,310
Tea	2	3	1			
Tobacco, unmanufactured	706	645	833	13,170	9,838	13,945
Vegetables	2,627	3,157	3,242	31	40	77
Vegetable products, miscellaneous	452	514	487	147	275	217
Total vegetable products	18,246	19,331	20,587	66,326	69,958	70,612
Total farm products	25,929	27,627	29,498	66,578	70,188	70,831
FOREST PRODUCTS						
Rosin, tar, turpentine, and pitch	19	18	14			
Wood	2,871	2,065	2,657	3	2	4
Total forest products	2,890	2,083	2,671	3	2	4
Total farm and forest products	28,819	29,710	32,169	66,581	70,190	70,835
	Shipments from the United States to Hawaii			Shipments from Hawaii to the United States		
ANIMALS AND ANIMAL PRODUCTS						
Animals, live	308	249	313	22	23	30
Dairy products	1,339	1,310	1,189			
Eggs	488	547	434			
Hides and skins, raw (except fur)				173	152	155
Meats and meat products	1,564	1,760	1,708	30	34	35
Wool, raw				43	74	62
Animal products, miscellaneous	42	18	35	102	108	116
Total animals and animal products	3,741	3,884	3,679	370	391	398
VEGETABLE PRODUCTS						
Chocolate and cocoa	105	134	126			
Coffee	66	47	46	431	987	615
Fruits	947	1,109	1,087	28,503	30,510	34,843
Grains and grain products	6,171	7,022	7,124	20	36	18
Nuts	95	106	105	4	2	5
Oilseeds and oilseed products	314	430	384			
Seeds, except oilseeds	31	29	40			
Sugar, molasses, etc	619	256	316	74,886	65,462	69,534
Tea	22	27	25			
Tobacco, unmanufactured	1	(1)	5	21	3	4
Vegetables	1,130	1,206	1,451	30	33	50
Vegetable products, miscellaneous	316	326	351	2	5	0
Total vegetable products	9,817	10,692	11,060	103,897	97,038	105,069
Total farm products	13,558	14,576	14,739	104,267	97,429	105,467

TABLE 494.—*Value of principal groups of farm and forest products exported from and imported into the United States, 1924–1926*—Continued

[Thousand dollars—i. e., 000 omitted]

Article	Year ended June 30					
	Shipments from the United States to Hawaii			Shipments from Hawaii to the United States		
	1924	1925	1926, preliminary	1924	1925	1926, preliminary
FOREST PRODUCTS						
Rosin, tar, turpentine, and pitch	57	41	30			
Wood	3,924	3,337	3,042	(1)	1	3
Total forest products	3,981	3,378	3,072	(1)	1	3
Total farm and forest products	17,539	17,954	17,811	104,267	97,430	105,470
	Shipments from the United States to Alaska			Shipments from Alaska to the United States		
ANIMALS AND ANIMAL PRODUCTS						
Animals, live	115	77	130	125	200	256
Dairy products	1,259	1,244	1,300			
Eggs	546	624	591			
Meats and meat products	1,779	1,927	2,039			
Animal products, miscellaneous	13	14	8			
Total animals and animal products	3,712	3,886	4,068	125	200	256
VEGETABLE PRODUCTS						
Chocolate and cocoa	18	22	26			
Coffee	302	375	395			
Fruits	847	905	887			
Grains and grain products	860	1,049	977			
Nuts	35	27	31			
Oilseeds and oilseed products	66	96	130			
Seeds, except oilseeds	7	11	5			
Sugar	599	533	469			
Tea	84	95	100			
Tobacco, unmanufactured	2	1	5			
Vegetables	797	927	870			
Vegetable products, miscellaneous	208	248	225			
Total vegetable products	3,825	4,289	4,120			
Total farm products	7,537	8,175	8,188	125	200	256
FOREST PRODUCTS						
Rosin, tar, turpentine, and pitch	51	52	35			
Wood	1,428	1,547	1,316	188	215	260
Forest products, miscellaneous				52	0	0
Total forest products	1,479	1,599	1,351	240	215	260
Total farm and forest products	9,016	9,774	9,539	365	415	516

Division of Statistical and Historical Research. Compiled from Monthly Summary of Foreign Commerce of the United States, June issues, 1925 and 1926.

[1] Less than 500.

TABLE 495.—*Exports of selected domestic agricultural products, averages 1900–1926 and annual 1909–1926*

[In thousands—i. e., 000 omitted]

Year ended June 30—	Butter	Cheese	Milk, condensed and evaporated	Eggs in the shell	Beef and its products, total [1,2]	Pork, fresh	Pork, pickled	Bacon, including Cumberland sides	Hams and shoulders, including Wiltshire sides	Lard
Average:	*Pounds*	*Pounds*	*Pounds*	*Dozen*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1900–1904	15, 425	31, 552	(3)	3, 125	636, 969	28, 090	119, 050	361, 686	209, 954	576, 414
1905–1909	12, 484	11, 849	(3)	5, 439	599, 332	13, 157	125, 799	271, 929	208, 230	622, 299
1910–1914	4, 278	4, 916	15, 774	13, 170	221, 513	2, 024	48, 275	182, 474	166, 813	474, 355
1915–1921	19, 519	37, 015	383, 512	26, 392	434, 209	34. 669	42, 252	705, 741	326, 692	542, 567
1922–1926	7, 202	6, 676	191, 475	30, 783	188, 223	32, 453	33, 553	320, 960	296, 941	853, 620
1909	5, 981	6, 823	(3)	5, 207	418, 844	9, 555	52, 355	244, 579	212, 170	528, 723
1910	3, 141	2, 847	13, 311	5, 326	286, 296	1, 940	40, 032	152, 163	146, 885	362, 928
1911	4, 878	10, 367	12, 180	8, 559	265, 924	1, 355	45, 729	156, 675	157, 709	476, 108
1912	6, 092	6, 338	20, 643	15, 406	233, 925	2, 598	56, 321	208, 574	204, 044	532, 256
1913	3, 586	2, 599	16, 526	20, 409	170, 208	2, 458	53, 749	200, [illegible]	159, 545	519, 025
1914	3, 694	2, 428	16, 209	16, 149	151, 212	2, 668	45, 543	193, 964	165, 882	481, 458
1915	9, 851	55, 363	37, 236	20, 784	394, 981	3, 908	45, 656	346, 718	203, 701	475, 532
1916	13, 487	44, 394	159, 578	26, 396	457, 556	63, 006	63, 461	579, 809	282, 209	427, 011
1917	26, 835	66, 050	259, 141	24, 926	423. 674	50, 436	46, 993	667, 152	266, 657	444, 770
1918	17, 736	44, 303	528, 759	18, 969	600, 132	21, 590	33, 222	815, 294	419, 572	392, 506
1919	33, 740	18, 792	728, 741	28, 885	591, 302	19, 644	31, 504	1, 238, 247	667, 240	724, 771
1920	27, 156	19, 378	708, 463	38, 827	368, 002	27, 225	41, 643	803, 667	275, 456	587, 225
1921	7, 829	10, 826	202, 668	26, 960	203, 815	57, 075	33, 286	489, 298	172. 012	746, 157
1922	7, 512	7, 471	277, 311	33, 762	222, 462	25, 911	33, 510	350, 549	271, 642	812, 379
1923	9, 410	8, 446	157. 038	34, 284	194, 912	43, 772	40, 934	408, 334	319, 269	952, 642
1924	5, 425	3, 938	213, 613	32, 832	185, 372	49, 113	37, 469	423, 500	381, 564	1, 014, 898
1925	8, 384	9. 432	173. 547	25, 107	190, 211	27, 603	26, 726	236, 263	292, 214	792, 735
1926 [4]	5, 280	4, 094	135, 865	27, 931	[5] 148,159	15, 867	29, 126	186, 153	220, 014	695, 445

Year ended June 30—	Pork and its products, total [1,6]	Oleo oil	Cotton, including linters [7]	Prunes	Raisins	Apples, fresh	Oranges	Barley, including flour and malt [8]	Corn, including cornmeal	Oats, including oatmeal	Rice, including flour, meal, and broken rice
Average:	*Pounds*	*Pounds*	*Bales*	*Pounds*	*Pounds*	*Barrels*	*Boxes*	*Bushels*	*Bushels*	*Bushels*	*Pounds*
1900–1904	1, 305, 217	147, 626	6, 669	39, 767	3, 314	1, 109	(3)	11, 931	111, 484	22, 188	3, 511
1905–1909	1, 248, 682	188, 550	8, 303	35, 063	6, 856	1, 239	(3)	9, 907	77, 857	13, 614	17, 009
1910–1914	913, 025	116, 225	8, 840	80, 428	18, 004	1, 551	1, 186	8, 087	41, 409	9, 655	18, 489
1915–1921	1, 678, 917	78, 154	6, 290	60, 582	57, 477	1, 641	1, 635	28, 197	45, 292	83, 085	241, 607
1922–1926	1, 563, 645	102, 130	6, 904	129, 650	91, 513	2, 764	2, 096	24, 471	66, 759	22, 382	260, 030
1909	1, 053, 142	179, 985	8, 896	22, 602	7, 880	896	867	6, 729	37, 665	2, 334	1, 567
1910	707, 110	126, 092	6, 413	89, 015	8. 526	922	932	4, 454	38, 128	2, 549	7, 050
1911	879, 455	138, 697	8, 068	51, 031	18, 660	1, 721	1, 179	9, 507	65, 615	3, 846	15, 575
1912	1, 071, 952	126, 467	11, 070	74, 328	19, 949	1, 456	1, 197	1, 655	41, 797	2, 678	26, 798
1913	984, 697	92, 850	9, 125	117, 951	28, 121	2, 150	1, 063	17, 874	50, 780	36, 455	24, 801
1914	921, 913	97, 017	9, 522	69, 814	14, 766	1, 507	1. 559	6, 945	10, 726	2, 749	18, 223
1915	1, 106, 180	80, 482	8, 807	43, 479	24, 845	2, 352	1, 759	28, 712	50, 668	100, 609	75, 449
1916	1, 462, 697	102, 646	6, 168	57, 423	75, 015	1, 466	1, 575	30, 821	39, 897	98, 960	120, 695
1917	1, 501, 948	67, 110	6, 176	59, 645	51, 903	1, 740	1, 850	20, 319	66, 753	95, 106	181, 372
1918	1, 692, 124	56, 603	4, 641	32, 927	54, 988	635	1, 240	28, 717	49, 073	125, 091	196, 363
1919	2, 704, 694	59, 292	5, 526	59, 072	84, 150	1, 576	1, 402	26, 997	23, 019	109, 005	193, 128
1920	1, 762, 611	74, 529	7, 087	114, 066	86, 857	1, 051	1, 619	34, 555	16, 729	43, 436	483, 385
1921	1, 522, 162	106, 415	5, 623	57, 461	24, 492	2, 665	2, 001	27, 255	70, 906	9, 391	440, 855
1922	1, 516, 320	117, 174	6, 718	109, 398	49, 639	1, 086	1, 641	27, 543	179; 490	21, 237	541, 509
1923	1, 794, 880	104, 956	5, 253	79, 229	93, 962	1, 735	1, 799	21, 909	96, 596	25, 413	370, 670
1924	1, 934, 189	92, 965	5, 899	136, 448	88, 152	4, 061	2, 592	13, 913	23, 135	8, 796	227, 757
1925	1, 400, 149	105, 145	8, 439	171, 771	90, 783	3, 170	2, 197	28, 543	9, 791	16, 777	112, 037
1926 [4]	1, 172, 685	90, 410	8, 212	151, 405	135, 027	3, 639	2, 253	30, 449	24, 783	39, 687	48, 175

Footnotes at end of table.

TABLE 495.—*Export of selected domestic agricultural products, averages 1900–1926 and annual 1909–1926*—Continued

[In thousands—i. e., 000 omitted]

Year ended June 30—	Rye, including flour	Wheat, including flour	Cottonseed cake and meal	Linseed cake and meal	Cottonseed oil, crude and refined	Sugar, raw and refined	Tobacco, unmanufactured [9]	Glucose and grape sugar	Hops	Starch
Average:	*Bushels*	*Bushels*	*Pounds*	*Pounds*	*Gallons*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1900–1904	2,734	196,690	1,074,720	552,190	38,792	12,980	328,321	167,108	11,420	68,173
1905–1909	1,186	116,181	1,178,349	684,450	45,863	33,444	321,197	161,690	15,613	62,143
1910–1914	888	107,103	933,288	661,819	36,192	70,986	392,183	180,524	15,548	96,206
1915–1921	26,357	257,030	706,718	397,788	27,923	1,021,020	468,037	168,735	15,342	150,613
1922–1926	32,880	207,237	567,863	579,815	8,203	824,789	496,665	178,889	16,920	269,865
1909	1,296	116,373	1,233,780	682,765	51,087	79,946	287,901	112,225	10,447	33,228
1910	242	89,173	640,089	652,317	29,861	125,507	357,196	149,820	10,589	51,536
1911	40	71,338	804,597	559,675	30,069	54,947	355,327	181,963	13,105	158,239
1912	31	81,891	1,293,690	596,115	53,263	79,594	379,845	171,156	12,191	83,645
1913	1,855	145,159	1,128,092	838,120	42,081	43,995	418,797	200,149	17,591	110,898
1914	2,278	147,955	799,974	662,869	25,738	50,896	449,750	199,531	24,268	76,714
1915	13,027	335,702	1,479,065	524,794	42,449	549,007	348,346	158,463	16,210	107,037
1916	15,250	246,221	1,057,222	640,916	35,535	1,630,151	443,293	186,406	22,410	210,185
1917	13,703	205,962	1,150,160	536,984	21,188	1,248,908	411,599	214,973	4,825	146,424
1918	17,186	132,579	44,681	151,400	13,437	576,483	289,171	97,858	3,495	73,883
1919	36,467	287,402	311,624	202,788	23,828	[10] 1,115,865	629,288	136,230	7,467	143,788
1920	41,531	222,030	449,573	336,336	21,253	[10] 1,444,031	648,038	245,264	80,780	237,609
1921	47,337	369,313	454,701	391,264	37,769	[10] 582,698	506,526	141,954	22,206	135,365
1922	29,944	282,566	532,721	484,059	12,215	[10] 2,002,039	463,389	273,982	19,522	386,873
1923	51,063	224,900	454,350	574,612	8,572	[10] 749,855	454,364	162,698	13,497	260,796
1924	19,902	159,880	250,366	500,114	5,256	[10] 270,942	597,630	148,051	20,461	262,842
1925	50,242	260,803	885,375	691,126	7,101	501,124	430,707	139,577	16,122	214,247
1926 [4]	12,647	108,085	716,505	589,166	7,809	599,984	537,240	170,142	14,998	224,569

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Cottonseed oil has been reduced to gallons at the rate of 7.5 pounds per gallon. It is assumed that 1 barrel of cornmeal is the product of 4 bushels of corn, 18 pounds of oatmeal the product of 1 bushel of oats, 1 barrel of rye flour the product of 6 bushels of rye, and 1.1 bushels of malt the product of 1 bushel of barley. The following factors have been used for converting flour into terms of wheat: 1900–1908, 1 barrel flour is the product of 4.75 bushels of grain; 1909–1917, 4.7 bushels; 1918 and 1919, 4.5 bushels; 1920, 4.6 bushels; 1921–1926, 4.7 bushels.

Boxed apples have been reduced to barrels at the rate of 3 boxes to the barrel.

[1] Total so far as ascertainable.
[2] Includes canned, cured, and fresh beef, oleo oil, oleo stock, oleomargarine, tallow, and stearin from animal fats.
[3] Reported in value only.
[4] Preliminary.
[5] Contains oleomargarine of animal or vegetable fats.
[6] Includes canned, fresh, salted, or pickled pork, lard, neutral lard, lard oil, bacon, and hams.
[7] Bales of 500 pounds gross.
[8] Includes barley flour 1919–1922. Barley flour not separately reported prior to 1919 or in 1923–1926.
[9] Includes "Stems, trimmings, and scrap tobacco."
[10] Includes maple sugar.

TABLE 496.—*Imports of selected agricultural products, averages 1900–1926, annual 1909–1926*

[In thousands—i. e., 000 omitted]

Year ended June 30—	Butter	Cheese	Cattle hides	Goatskins	Total hides and skins except furs	Silk [1]	Wool, unmanufactured	Sausage casings	Cocoa or cacao beans
Average:	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1900–1904	192	17, 846	131, 736	83, 047	309, 360	13, 942	155, 394	(2)	54, 936
1905–1909	532	30, 462	138, 922	95, 555	372, 292	20, 061	209, 413	(2)	91, 774
1910–1914	2, 480	49, 220	253, 430	95, 822	530, 909	28, 671	207, 584	[3] 4, 629	141, 800
1915–1921	9, 445	20, 213	332, 076	85, 358	573, 359	42, 895	394, 663	[3] 10, 522	319, 103
1922–1926	13, 684	56, 865	223, 236	78, 251	436, 741	64, 866	329, 968	17, 670	376, 247
1909	646	35, 548	192, 252	104, 048	444, 554	25, 188	266, 409	(2)	129, 855
1910	1, 360	40, 818	318, 004	115, 845	608, 619	23, 457	263, 928	(2)	108, 668
1911	1, 008	45, 569	150, 128	86, 914	374, 891	26, 666	137, 648	4, 394	138, 058
1912	1, 026	46, 542	251, 012	95, 341	587, 768	26, 585	193, 401	4, 924	145, 969
1913	1, 162	49, 388	268, 042	96, 250	572, 197	32, 101	195, 293	4, 570	140, 039
1914	7. 842	63, 784	279, 963	84, 759	561, 071	34, 546	247 [illegible]49	(2)	176, 268
1915	3, 828	50, 139	344, 341	66, 547	538, 218	31, 053	3[illegible], 083	(2)	192, 207
1916	713	30, 088	434, 178	100, 657	743, 670	41, 925	534, 828	(2)	243, 232
1917	524	14, 482	386, 600	105, 640	700, 207	40, 351	372, 372	(2)	338, 654
1918	1, 806	9, 839	267, 500	66, 933	432, 517	43, 681	379, 130	(2)	399, 040
1919	4, 131	2, 442	253, 877	89, 005	448, 142	50, 069	422, 415	8, 353	313, 037
1920	20, 771	17, 914	439, 461	126, 996	798, 569	58, 410	427, 578	11, 143	420, 331
1921	34, 344	16, 585	198, 573	41, 728	352, 193	34, 778	318, 236	12, 071	327, 123
1922	9, 551	34, 271	204, 936	83, 535	392, 904	57, 437	255, 087	12, 435	317, 124
1923	15, 772	54, 555	405, 383	89, 401	682, 893	63, 188	525, 473	18, 503	381, 508
1924	20, 466	66, 597	176, 475	65, 881	365, 194	56, 595	239, 122	20, 386	382, 071
1925	7, 189	61, 489	199, 310	65, 956	387, 447	70, 270	284, 706	17, 755	382, 570
1926 [4]	6, 440	62, 412	155, 074	86, 484	355, 267	76, 838	345, 452	19, 271	417, 060

Year ended June 30—	Coffee	Cotton, unmanufactured	Bananas	Olives	Wheat, including flour [5]	Almonds in terms of shelled [6]	Peanuts in terms of shelled [7]	Walnuts in terms of shelled [8]	Chinese wood oil or Chinese nut oil
Average:	*Pounds*	*Pounds*	*Bunches*	*Gallons*	*Bushels*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1900–1904	928, 709	67, 292	(2)	[3] (2)	471	7, 862	(9)	[10] 18,017	(11)
1905–1909	965, 058	78, 771	[10] 36,988	[3] 2, 796	1, 035	13, 832	(9)	26, 849	(11)
1910–1914	899, 339	110, 957	43, 684	4, 388	1, 834	16, 039	22, 615	28, 497	39, 242
1915–1921	1, 227, 534	177, 606	37, 157	4, 335	19, 806	19, 857	49, 659	19, 748	45, 920
1922–1926	1, 337, 950	175, 609	48, 924	[8] 6, 247	17, 470	23, 755	46, 918	31, 179	81, 084
1909	1, 049, 869	86, 518	36, 974	2, 969	475	11, 029	(9)	26, 158	(11)
1910	871, 470	86, 038	38, 157	4, 555	845	18, 556	29, 276	33, 641	(11)
1911	875, 367	113, 768	44, 699	3, 045	1, 175	15, 523	18, 834	33, 619	(11)
1912	885, 201	109, 780	44, 521	5, 077	3, 445	17, 231	11, 248	37, 214	35, 757
1913	863, 131	121, 852	42, 357	8, 946	1, 304	13, 856	14, 989	17, 213	44, 975
1914	1, 001, 528	123, 347	48, 684	5, 316	2, 402	15, 027	38, 726	20. 800	36, 993
1915	1, 118. 691	183, 205	41, 092	3, 622	728	13, 679	19, 338	20, 490	37, 052
1916	1, 201, 104	282, 801	36, 755	5, 938	7, 254	14, 546	25, 407	23, 733	37, 262
1917	1, 319, 871	147, 062	34, 661	5, 642	24, 960	19, 916	32, 385	23, 839	51, 481
1918	1, 143, 891	103, 326	34, 550	2, 385	31, 215	20, 845	75, 463	16, 252	36, 118
1919	1, 046, 029	103, 592	35, 382	3, 501	11, 289	25, 615	20, 425	9, 057	46, 625
1920	1, 414, 228	345, 314	36, 848	5, 206	5, 511	28, 533	128, 390	28. 961	79, 602
1921	1, 348, 926	125, 939	40, 808	4, 054	57, 682	15, 861	46, 202	15, 902	33, 300
1922	1, 238, 012	179, 165	46, 120	(2)	17, 375	28, 036	9, 678	35, 174	55, 572
1923	1, 305, 188	236, 092	44, 504	(2)	20, 031	24, 345	45, 013	25, 970	89, 392
1924	1, 429, 617	146, 024	44, 935	6, 848	28, 079	24, 207	50, 683	26, 428	80, 898
1925	1, 279, 570	155, 092	50, 513	5, 901	6, 201	22, 503	98, 191	36, 623	94, 695
1926 [4]	1, 437, 364	161, 674	58, 550	5, 992	15, 664	19, 686	36, 026	31, 698	84, 861

Footnotes at end of table.

Table 496.—*Imports of selected agricultural products, averages 1900–1926, annual 1909–1926*—Continued

[In thousands—i. e., 000 omitted]

Year ended June 30—	Coconut oil	Olive oil, edible and inedible	Coconut meat, broken, or copra, shredded, desiccated, or prepared	Flaxseed	Sugar, raw and refined	Molasses	Tea	Total tobacco, unmanufactured	Jute and jute butts, unmanufactured	Manila or abaca	Sisal and henequen
	Pounds	*Pounds*	*Pounds*	*Bushels*	*Pounds*	*Gallons*	*Pounds*	*Pounds*	*Long tons*	*Long tons*	*Long tons*
Average:											
1900–1904	(11)	9,746	(9)	504	3,788,348	13,788	94,342	28,216	102	54	87
1905–1909	[3] 44,486	32,541	[3] 15,010	218	3,922,704	20,221	98,353	38,688	114	58	98
1910–1914	54,145	41,736	45,128	7,258	4,388,801	33,859	95,108	55,790	93	72	140
1915–1921	179,674	45,472	252,370	14,156	5,962,139	113,669	105,675	66,695	86	70	171
1922–1926	215,049	113,967	358,772	18,198	8,449,009	179,021	96,089	68,470	72	75	108
1909	52,491	33,746	23,843	594	4,189,421	22,003	114,917	43,123	157	62	91
1910	48,346	34,089	21,306	5,002	4,094,546	31,292	85,626	46,853	68	93	100
1911	51,118	37,382	37,817	10,499	3,937,978	23,838	102,564	48,203	65	74	118
1912	46,371	41,044	69,912	6,842	4,104,618	28,828	101,407	54,740	101	69	114
1913	50,504	43,803	40,870	5,294	4,740,041	33,927	94,813	67,977	125	74	154
1914	74,386	52,361	55,735	8,653	5,066,822	51,410	91,131	61,175	106	50	216
1915	63,135	55,230	96,485	10,660	5,420,982	70,840	96,988	45,809	83	51	186
1916	66,008	60,820	118,613	14,679	5,633,162	85,717	109,866	48,078	108	79	229
1917	79,223	61,381	256,801	12,394	5,332,746	110,238	103,364	49,105	113	77	143
1918	259,195	19,889	507,576	13,367	4,903,327	130,731	151,315	86,991	78	86	150
1919	344,728	32,983	315,749	8,427	5,836,048	130,075	108,172	83,951	53	68	153
1920	271,540	52,716	258,229	23,392	7,596,032	154,670	97,826	94,005	77	77	176
1921	173,889	35,288	213,134	16,170	7,012,679	113,414	72,196	58,923	90	52	159
1922	230,230	83,337	294,104	13,632	8,464,335	87,908	86,142	65,225	62	44	72
1923	212,573	117,262	338,597	25,006	8,733,488	161,135	96,669	75,786	85	98	98
1924	181,230	113,409	344,920	19,577	7,530,000	174,037	105,443	51,497	84	98	97
1925	250,328	118,071	371,961	13,419	8,678,131	215,778	92,779	76,870	56	73	146
1926[4]	[14] 200,878	137,757	444,278	19,354	8,839,091	256,246	99,411	69,974	71	62	126

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[1] Includes "Silk, raw or as reeled from cocoon," "Silk waste," and "Silk cocoons."
[2] Reported in value only.
[3] Three-year average.
[4] Preliminary.
[5] The following conversion factors were used in reducing flour to terms of wheat: 1900–1908, 4.75 bushels; 1909–1917, 4.7 bushels; 1918 and 1919, 4.5 bushels; 1920, 4.6 bushels; 1921–1926, 4.7 bushels.
[6] Unshelled almonds converted to terms of shelled on the basis of 30 per cent unshelled equals shelled.
[7] Unshelled peanuts converted to terms of shelled on the basis of 3 pounds of unshelled equals 2 pounds shelled.
[8] Unshelled walnuts converted to terms of shelled on the basis of 42 per cent unshelled equals shelled.
[9] Included with "All other nuts."
[10] Two-year average.
[11] Included with "All other, fixed or expressed" vegetable oils.
[12] Included with "All other, fixed or expressed" vegetable oils, 1905–1906, and "Nut oil, or oil of nuts," 1907–1909.
[13] Included with "Nut oil, or oil of nuts."
[14] Does not include "dutiable" coconut oil.

TABLE 497.—*Exports and imports of selected forest products, 1909–1926*

[In thousands—i. e., 000 omitted]

Year ended June 30—	Domestic exports					Imports					
	Lumber		Rosin	Spirits of turpentine	Timber, hewn and sawed	Camphor, crude	Rubber and similar gums, crude, total	Lumber		Shellac	Wood pulp
	Boards, deals, and planks	Staves						Boards, deals, planks, and other sawed	Shingles		
	M feet	*Number*	*Barrels*	*Gallons*	*M feet*	*Pounds*	*Pounds*	*M feet*	*M*	*Pounds*	*L. tons*
1909	1,358	52,583	2,170	17,502	419	1,990	114,599	846	1,058	19,185	274
1910	1,684	49,784	2,144	15,588	491	3,007	154,621	1,054	763	29,402	378
1911	2,032	65,726	2,190	14,818	532	3,726	145,744	872	643	15,495	492
1912	2,307	64,163	2,474	19,599	438	2,155	175,966	905	515	18,746	478
1913	2,550	89,006	2,806	21,094	512	3,709	170,747	1,091	560	21,912	502
1914	2,405	77,151	2,418	18,901	441	3,477	161,777	929	895	16,720	508
1915	1,129	39,297	1,372	9,464	174	3,729	196,122	939	1,487	24,153	588
1916	1,177	57,538	1,571	9,310	201	4,574	304,183	1,218	1,769	25,818	507
1917	1,042	61,469	1,639	8,842	184	6,885	364,914	1,175	1,924	32,540	699
1918	1,068	63,207	1,071	5,095	106	3,638	414,984	1,28[illegible]	1,878	22,913	504
1919	1,073	62,753	882	8,065	92	2,623	422,215	9[illegible]7	1,757	14,269	475
1920	1,518	80,791	1,322	7,461	234	4,026	660,610	1,492	2,152	34,151	727
1921	1,269	65,710	877	9,742	123	2,093	371,300	920	1,831	23,872	624
1922	1,543	35,162	786	10,786	268	1,592	578,512	1,124	2,190	30,768	902
1923	1,549	57,466	1,040	9,012	383	8,498	810,028	1,958	2,695	32,773	1,293
1924	1,867	60,868	1,205	11,194	815	1,955	633,489	1,786	2,417	28,512	1,188
1925	1,929	79,922	1,412	12,308	586	1,904	824,434	1,732	2,551	21,436	1,529
1926 [1]	1,988	75,534	1,086	10,241	651	2,616	952,659	1,869	2,4[illegible]2	26,188	1,469

Division of Statistical and Historical Research. Compiled from Foreign Commerce and Navigation of the United States, 1909–1918, and Monthly Summary of Foreign Commerce of the United States, June issues, 1920–1926.

[1] Preliminary.

TABLE 498.—*Destination of principal farm products exported from the United States, 1924–1926*

Article and country to which exported	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS						
Cattle:	*Number*	*Number*	*Number*	*Per cent*	*Per cent*	*Per cent*
Total	32,761	105,611	35,176	100.0	100.0	100.0
Mexico	26,006	99,375	29,602	79.4	94.1	84.2
Cuba	3,046	3,214	2,937	9.3	3.0	8.4
Belgium	2,398	844	0	7.3	.8	.0
Other countries	1,311	2,178	2,637	4.0	2.1	7.4
Horses:						
Total	11,693	10,879	15,703	100.0	100.0	100.0
Mexico	7,579	5,375	12,907	64.8	49.4	82.2
Canada	1,754	1,727	1,616	15.0	15.9	10.3
Spain	1,011	562	340	8.6	5.2	2.2
Cuba	604	1,730	410	5.2	15.9	2.6
Other countries	745	1,485	430	6.4	13.6	2.7
Butter:	*Pounds*	*Pounds*	*Pounds*			
Total	5,425,299	8,383,782	5,279,835	100.0	100.0	100.0
Mexico	843,245	1,108,750	1,014,916	15.5	13.0	19.2
Cuba	804,905	870,306	781,660	14.8	10.4	14.8
Haiti	512,453	565,121	585,077	9.4	6.8	11.1
Other West Indies [1]	732,540	805,261	479,488	13.5	9.6	9.1
Panama	739,120	805,650	719,025	13.6	9.6	13.6
Peru	518,243	455,316	423,563	9.6	5.4	8.0
Other South America	209,876	325,206	384,155	3.9	3.9	7.3
Philippine Islands	240,749	181,479	229,604	4.6	2.2	4.3
United Kingdom	51	2,354,289	0	(2)	28.1	.0
Other countries	815,117	912,404	662,347	15.1	11.0	12.6

[1] Excludes Bermuda.

[2] Less than 0.05 per cent.

TABLE 498.—*Destination of principal farm products exported from the United States, 1924–1926*—Continued

Article and country to which exported	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS—con.						
Cheese:	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	3,938,311	9,432,000	4,094,063	100.0	100.0	100.0
Cuba	1,122,695	1,063,320	910,260	28.5	11.3	22.2
Other West Indies [1]	510,140	565,971	599,934	12.9	6.0	14.6
Mexico	824,468	983,088	939,655	21.0	10.4	23.0
Panama	339,481	407,526	402,607	8.6	4.3	9.8
Central America	280,679	276,388	277,703	7.1	2.9	6.8
Canada	264,967	1,334,054	216,199	6.7	14.1	5.3
China	114,722	143,985	233,053	2.9	1.5	5.7
Germany	34,719	3,600,992	13,066	.9	38.2	.3
Other countries	446,490	1,056,681	501,586	11.4	11.3	12.3
Milk:						
Condensed—						
Total	67,111,718	49,297,128	42,655,817	100.0	100.0	100.0
Total Europe	4,014,294	973,457	479,230	6.0	2.0	1.1
Cuba	32,266,000	21,225,997	16,336,721	48.1	43.1	38.3
Japan, including Chosen	7,539,990	5,872,641	5,115,262	11.2	11.9	12.0
Philippine Islands	8,045,581	5,820,585	7,766,616	12.0	11.8	18.2
China	2,769,086	2,667,615	3,811,951	4.1	5.4	8.9
Hongkong	2,469,790	2,408,724	1,991,675	3.7	4.9	4.7
Mexico	1,599,552	1,403,935	1,285,389	2.4	2.8	3.0
Other countries	8,407,445	8,924,174	5,868,973	12.5	18.1	13.8
Evaporated—						
Total	146,500,934	124,250,062	93,209,766	100.0	100.0	100.0
Total Europe	109,407,078	85,910,583	52,146,631	74.7	69.1	55.9
Germany	49,403,004	43,355,455	19,305,728	33.7	34.9	20.7
United Kingdom	36,527,662	28,662,026	29,180,634	24.9	23.1	31.3
France	7,888,594	3,765,448	1,010,790	5.4	3.0	1.1
Netherlands	7,460,785	7,328,170	1,742,580	5.1	5.9	1.9
Other Europe	8,127,033	2,799,484	906,899	5.6	2.2	.9
Philippine Islands	8,161,713	10,066,562	12,902,220	5.6	8.1	13.8
Peru	4,164,858	5,012,879	3,736,468	2.8	4.0	4.0
Panama	3,660,092	3,742,465	3,596,513	2.5	3.0	3.9
Mexico	2,625,935	2,589,158	3,292,771	1.8	2.1	3.5
Other countries	18,480,258	16,928,415	17,535,163	12.6	13.7	18.9
Powdered—						
Total	2,705,924	5,622,815	3,269,521	100.0	100.0	100.0
Total Europe	986,104	4,058,960	1,124,364	36.4	72.2	34.4
United Kingdom	304,018	701,733	190,507	11.2	12.5	5.8
France	302,839	275,525	165,331	11.2	4.9	5.0
Germany	243,105	1,036,003	204,528	9.0	18.4	6.3
Other Europe	136,142	2,045,699	563,998	5.0	36.4	17.3
Japan	913,192	409,702	[3] 468,169	33.8	7.3	14.3
Cuba	150,699	237,451	161,660	5.6	4.2	4.9
Canada	110,273	129,878	111,938	4.1	2.3	3.4
Panama	101,415	127,805	198,609	3.7	2.3	6.1
Mexico	76,494	139,853	142,670	2.8	2.5	4.4
China	57,458	86,547	432,188	2.1	1.5	13.2
Other countries	310,289	432,616	629,923	11.5	7.7	19.3
Eggs, in the shell:	*Dozen*	*Dozen*	*Dozen*			
Total	32,831,528	25,106,741	27,930,637	100.0	100.0	100.0
Total Europe	3,391,196	777,076	1,418,823	10.3	3.1	5.1
United Kingdom	3,376,762	777,020	1,417,917	10.3	3.1	5.1
Other Europe	14,434	56	906	(2)	(2)	(2)
Cuba	13,135,196	11,957,622	12,235,048	40.0	47.6	43.8
Mexico	6,543,802	4,719,489	4,038,631	20.0	18.8	14.4
Canada	6,479,665	2,680,735	3,424,676	19.7	10.7	12.3
Argentina	1,881,710	3,567,630	4,959,870	5.7	14.2	17.8
Other countries	1,399,959	1,404,189	1,853,589	4.3	5.6	6.6

[1] Excludes Bermuda. [2] Less than 0.05 per cent. [3] Includes Chosen.

TABLE 498.—*Destination of principal farm products exported from the United States, 1924–1926*—Continued

Article and country to which exported	Year ended June 30— 1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS—con.						
Beef, canned:	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	1,544,707	1,834,823	2,349,877	100.0	100.0	100.0
Total Europe	774,213	752,560	1,471,533	50.1	41.0	62.6
Germany	387,733	29,064	8,702	25.1	1.6	.4
United Kingdom	303,680	691,917	1,418,969	19.7	37.7	60.4
Netherlands	72,444	0	533	4.7	.0	(²)
Other Europe	10,356	31,579	43,329	.6	1.7	1.8
Philippine Islands	113,388	213,361	105,454	7.3	11.6	4.5
Cuba	35,230	163,401	154,625	2.3	8.9	6.6
Other West Indies [1]	100,080	125,341	216,945	6.5	6.8	9.2
Mexico	77,627	95,252	99,983	5.0	5.2	4.3
Honduras	57,852	42,243	36,111	3.7	2.3	1.5
Newfoundland and Labrador	52,264	66,923	44,664	3.4	3.6	1.9
Panama	37,788	33,987	41,969	2.4	1.9	1.8
Canada	31,735	141,875	49,559	2.1	7.7	2.1
Other countries	264,530	199,880	129,034	17.2	11.0	5.5
Beef, pickled and other cured:						
Total	21,850,981	22,407,029	19,557,049	100.0	100.0	100.0
Total Europe	3,984,643	4,192,364	3,130,075	18.2	18.7	16.0
United Kingdom	1,667,457	1,944,258	952,068	7.6	8.7	4.9
Norway	1,105,581	1,264,410	1,119,511	5.1	5.6	5.7
Other Europe	1,211,605	983,696	1,058,496	5.5	4.4	5.4
Newfoundland and Labrador	7,420,262	7,841,130	6,778,900	34.0	35.0	34.7
West Indies [1]	4,828,120	5,011,219	4,683,976	22.1	22.4	24.0
British West Africa	1,277,336	868,050	926,874	5.8	3.9	4.7
Dutch Guiana	855,750	1,108,906	1,061,500	3.9	4.9	5.4
Other South America	1,466,641	1,924,961	1,535,506	6.7	8.6	7.8
Other countries	2,018,229	1,460,399	1,440,218	9.3	6.5	7.4
Bacon:						
Total	408,099,391	211,706,124	165,229,140	100.0	100.0	100.0
Total Europe	368,914,695	177,909,014	136,397,276	90.4	84.0	82.6
United Kingdom	146,232,728	104,626,031	86,557,001	35.8	49.4	52.4
Germany	80,226,029	25,972,307	14,042,685	19.6	12.3	8.5
Italy	38,399,216	7,356,607	3,264,444	9.4	3.5	2.0
Netherlands	37,059,139	7,994,827	6,379,113	9.1	3.8	3.9
Norway	10,427,177	8,774,714	7,050,381	2.6	4.1	4.3
Other Europe	56,570,406	23,184,528	19,103,652	13.9	10.9	11.5
Cuba	26,048,678	27,330,083	22,084,742	6.4	12.9	13.4
Other countries	13,136,018	6,467,027	6,747,122	3.2	3.1	4.0
Cumberland sides:						
Total	[4] 15,400,653	24,556,786	20,923,910	100.0	100.0	100.0
Total Europe	[4] 15,069,080	24,322,791	20,419,565	97.8	99.1	97.6
United Kingdom	[4] 14,795,568	23,978,800	20,351,845	96.1	97.6	97.3
Other Europe	[4] 273,512	343,991	67,720	1.7	1.5	.3
Other countries	[4] 331,573	233,995	504,345	2.2	.9	2.4
Hams and shoulders, cured:						
Total	369,458,550	277,567,094	208,445,828	100.0	100.0	100.0
Total Europe	332,846,759	248,900,115	187,035,030	90.1	89.7	89.7
United Kingdom	297,751,898	229,124,536	180,610,754	80.6	82.6	86.6
Belgium	21,159,400	13,399,710	3,928,549	5.7	4.8	1.9
Other Europe	13,935,461	6,375,869	2,495,727	3.8	2.3	1.2
Cuba	14,247,756	15,724,791	10,552,569	3.9	5.7	5.1
Other countries	22,364,035	12,942,188	10,858,229	6.0	4.6	5.2
Wiltshire sides:						
Total	[4] 12,105,184	14,647,217	11,568,610	100.0	100.0	100.0
Total Europe	[4] 10,415,344	12,025,415	9,557,430	86.0	82.1	82.6
United Kingdom	[4] 10,019,129	12,025,415	9,524,511	82.8	82.1	82.3
Other Europe	[4] 396,215	0	32,919	3.2	.0	.3
Canada	[4] 1,667,151	2,572,596	2,010,582	13.8	17.6	17.4
Other countries	[4] 22,689	49,206	598	.2	.3	(²)

[1] Excludes Bermuda. [2] Less than 0.05 per cent. [4] Six months, January–June.

Table 498.—*Destination of principal farm products exported from the United States, 1924–1926*—Continued

Article and country to which exported	Year ended June 30— 1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS—con.						
Pork:						
Canned—	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	2,691,136	4,185,496	5,946,958	100.0	100.0	100.0
Total Europe	2,399,164	4,017,700	5,242,184	89.2	96.0	88.1
United Kingdom	2,220,361	4,003,147	5,195,503	82.5	95.6	87.3
Other Europe	178,803	14,553	46,681	6.7	.4	.8
Other countries	291,972	167,796	704,774	10.8	4.0	11.9
Fresh—						
Total	49,112,616	27,603,460	15,867,426	100.0	100.0	100.0
Total Europe	37,004,242	22,033,391	11,660,282	75.3	79.8	73.5
United Kingdom	27,741,986	19,016,381	10,686,098	56.5	68.9	67.3
Other Europe	9,262,256	3,017,010	974,184	18.8	10.9	6.2
Canada	8,827,703	1,754,032	1,194,301	18.0	6.4	7.5
Cuba	2,181,492	2,045,281	2,137,599	4.5	7.4	13.5
Other countries	1,099,179	1,770,756	875,244	2.2	6.4	5.5
Pickled—						
Total	37,469,399	26,726,116	29,125,666	100.0	100.0	100.0
Canada	8,436,629	5,391,594	7,889,143	22.5	20.2	27.1
Newfoundland and Labrador	5,154,915	4,206,344	3,580,443	13.8	15.7	12.3
Cuba	4,411,895	3,909,098	5,934,554	11.8	14.6	20.4
United Kingdom	4,105,706	3,280,555	2,972,483	11.0	12.3	10.2
Germany	3,308,849	491,821	476,431	8.8	1.8	1.6
British West Indies	3,084,256	2,671,817	2,456,704	8.2	10.0	8.4
Norway	2,349,184	1,813,984	1,469,148	6.3	6.8	5.1
Haiti	1,304,729	1,013,649	972,101	3.5	3.8	3.3
Other countries	5,313,236	3,947,254	3,374,659	14.1	14.8	11.6
Lard:						
Total	1,014,898,388	792,735,441	695,445,258	100.0	100.0	100.0
Total Europe	824,418,145	623,875,033	518,691,216	81.2	78.7	74.6
Germany	329,792,983	251,982,930	208,541,119	32.5	31.8	30.0
United Kingdom	240,016,876	223,010,931	218,145,870	23.7	28.1	31.4
Italy	77,209,556	41,145,363	13,890,619	7.6	5.2	2.0
Netherlands	71,570,259	50,368,556	41,478,525	7.1	6.4	6.0
Belgium	40,634,402	22,538,090	14,091,537	4.0	2.8	2.0
Other Europe	65,194,069	34,829,163	22,543,546	6.3	4.4	3.2
Cuba	92,082,570	86,479,830	77,376,797	9.1	10.9	11.1
Other countries	98,397,673	82,380,578	99,377,245	9.7	10.4	14.3
Lard compounds, containing animal fats:						
Total	6,907,366	8,922,451	14,957,990	100.0	100.0	100.0
Haiti	1,498,345	1,528,117	1,457,506	21.7	17.1	9.7
Mexico	1,307,222	1,251,842	1,020,185	18.9	14.0	6.8
Cuba	930,353	2,750,064	7,690,528	13.5	30.8	51.4
Central America	701,491	597,906	815,125	10.2	6.7	5.5
British West Indies	499,742	294,022	263,702	7.2	3.3	1.8
Panama	315,049	225,131	335,236	4.6	2.5	2.3
Virgin Islands	283,383	252,924	276,312	4.1	2.8	1.8
United Kingdom	265,037	657,460	423,166	3.8	7.4	2.8
Other countries	1,106,744	1,364,895	2,676,230	16.0	15.4	17.9
Lard, neutral:						
Total	24,238,981	20,420,916	20,131,967	100.0	100.0	100.0
Total Europe	22,020,823	18,669,708	18,641,105	90.8	91.4	92.6
Netherlands	8,027,907	6,141,191	4,645,128	33.1	30.1	23.1
United Kingdom	4,669,418	2,702,025	4,039,127	19.3	13.2	20.1
Norway	3,293,354	1,891,235	1,315,045	13.6	9.3	6.5
Germany	2,411,557	4,705,542	5,518,715	10.0	23.0	27.4
Sweden	1,401,896	1,226,967	903,597	5.8	6.0	4.5
Denmark	1,284,990	1,027,015	1,001,000	5.3	5.0	5.0
Other Europe	991,701	975,728	1,218,493	4.1	4.8	6.0
Other countries	2,218,158	1,751,213	1,490,862	9.2	8.6	7.4

TABLE 498.—*Destination of principal farm products exported from the United States, 1924–1926*—Continued

Article and country to which exported	Year ended June 30— 1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS—con.						
Oleo oil:	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	92, 965, 001	105, 145, 483	90, 409, 618	100. 0	100. 0	100. 0
Total Europe	89, 707, 125	102, 135, 350	87, 176, 706	96. 5	97. 1	96. 4
Netherlands	41, 049, 811	46, 206, 581	26, 270, 722	44. 8	44. 0	29. 1
United Kingdom	12, 177, 331	12, 452, 715	17, 611, 418	13. 1	11. 8	19. 5
Norway	12, 142, 884	8, 917, 808	5, 540, 509	13. 1	8. 5	6. 1
Germany	11, 218, 141	18, 868, 974	24, 065, 240	12. 1	17. 9	26. 6
Greece	4, 761, 951	6, 660, 802	5, 735, 138	5. 1	6. 3	6. 3
Other Europe	7, 757, 007	9, 028, 470	8, 013, 679	8. 3	8. 6	8. 8
Other countries	3, 257, 876	3, 010, 133	3, 232, 912	3. 5	2. 9	3. 6
VEGETABLE PRODUCTS						
Cotton, excluding linters.	*500-pound bales*	*500-pound bales*	*500-pound bales*			
Total	5, 783, 699	8, 238, 817	8, 109, 544	100. 0	100. 0	100. 0
Total Europe	5, 020, 484	7, 141, 289	6, 624, 321	86. 8	86. 7	81. 7
United Kingdom	1, 685, 377	2, 605, 456	2, 278, 372	29. 1	31. 6	28. 1
Germany	1, 271, 738	1, 765, 673	1, 657, 070	22. 0	21. 4	20. 4
France	738, 841	932, 866	927, 184	12. 8	11. 3	11. 4
Italy	559, 833	747, 594	742, 677	9. 7	9. 1	9. 2
Other Europe	764, 695	1, 089, 700	1, 019, 018	13. 2	13. 3	12. 6
Japan	583, 957	849, 584	1, 118, 246	10. 1	10. 3	13. 8
Other countries	179, 258	247, 944	366, 977	3. 1	3. 0	4. 5
Linters:						
Total	115, 014	200, 254	102, 103	100. 0	100. 0	100. 0
Total Europe	109, 360	190, 737	87, 897	95. 1	95. 2	86. 1
Germany	73, 816	126, 319	33, 237	64. 2	63. 0	32. 6
France	12, 583	18, 607	16, 401	10. 9	9. 3	16. 1
United Kingdom	9, 518	17, 968	19, 269	8. 3	9. 0	18. 9
Belgium	6, 636	8, 667	3, 625	5. 8	4. 3	3. 6
Other Europe	6, 807	19, 175	15, 365	5. 9	9. 6	14. 9
Canada	5, 043	9, 185	13, 761	4. 4	4. 6	13. 5
Other countries	611	332	445	. 5	. 2	. 4
Fruits:						
Dried—						
Apples—	*Pounds*	*Pounds*	*Pounds*			
Total	30, 410, 339	19, 224, 682	24, 833, 017	100. 0	100. 0	100. 0
Total Europe	29, 661, 873	18, 551, 676	23, 840, 176	97. 5	96. 5	96. 0
Germany	12, 211, 971	6, 632, 065	8, 864, 415	40. 2	34. 5	35. 7
Netherlands	9, 384, 147	4, 714, 118	7, 870, 082	30. 9	24. 5	31. 7
Sweden	2, 594, 713	2, 168, 945	1, 974, 835	8. 5	11. 3	8. 0
United Kingdom	2, 171, 010	2, 576, 867	1, 902, 444	7. 1	13. 4	7. 7
Denmark	1, 585, 798	910, 860	1, 053, 289	5. 2	4. 7	4. 2
Other Europe	1, 714, 234	1, 548, 941	2, 174, 511	5. 6	8. 1	8. 7
Other countries	748, 466	673, 006	992, 841	2. 5	3. 5	4. 0
Apricots—						
Total	38, 776, 678	13, 292, 175	18, 131, 678	100. 0	100. 0	100. 0
Total Europe	35, 582, 098	10, 699, 429	16, 220, 759	91. 8	80. 5	89. 5
Netherlands	9, 896, 676	1, 425, 867	4, 063, 439	25. 5	10. 7	22. 4
Germany	9, 252, 220	3, 082, 213	3, 945, 781	23. 9	23. 2	21. 8
United Kingdom	6, 419, 033	1, 993, 868	2, 653, 652	16. 6	15. 0	14. 6
Denmark	3, 593, 724	836, 282	1, 707, 457	9. 3	6. 3	9. 4
Sweden	1, 670, 550	748, 954	775, 779	4. 3	5. 6	4. 3
France	647, 575	1, 017, 712	931, 494	1. 7	7. 7	5. 1
Other Europe	4, 102, 311	1, 594, 533	2, 143, 157	10. 5	12. 0	11. 8
Canada	2, 152, 800	1, 663, 792	1, 131, 981	5. 6	12. 5	6. 2
Other countries	1, 041, 720	928, 954	778, 938	2. 6	7. 0	4. 4

TABLE 498.—*Destination of principal farm products exported from the United States, 1924–1926*—Continued

Article and country to which exported	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Fruits—Continued.						
Dried—Continued.						
Prunes—	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	136, 448, 485	171, 771, 206	151, 405, 131	100. 0	100. 0	100. 0
Total Europe	115, 110, 131	150, 540, 762	125, 277, 810	84. 4	87. 6	82. 7
Germany	51, 125, 557	55, 000, 201	18, 893, 130	37. 5	32. 0	12. 5
United Kingdom	30, 160, 616	31, 632, 927	37, 095, 503	22. 1	18. 4	24. 5
Netherlands	12, 015, 176	15, 564, 890	8, 942, 858	8. 8	9. 1	5. 9
Sweden	7, 047, 009	5, 465, 238	4, 870, 840	5. 2	3. 2	3. 2
France	3, 694, 496	20, 239, 510	39, 145, 833	2. 7	11. 8	25. 8
Other Europe	11, 067, 277	22, 637, 996	16, 329, 646	8. 1	13. 1	10. 8
Canada	15, 209, 349	14, 775, 869	17, 723, 177	11. 1	8. 6	11. 7
Other countries	6, 129, 005	6, 454, 575	8, 404, 144	4. 5	3. 8	5. 6
Raisins—						
Total	88, 151, 644	90, 782, 980	135, 027, 075	100. 0	100. 0	100. 0
Total Europe	32, 551, 791	39, 286, 672	83, 706, 162	36. 9	43. 3	62. 0
United Kingdom	20, 607, 010	23, 675, 405	43, 184, 820	23. 4	26. 1	32. 0
Denmark	4, 705, 554	3, 801, 998	2, 107, 209	5. 3	4. 2	1. 6
Netherlands	4, 107, 251	4, 286, 150	13, 802, 482	4. 7	4. 7	10. 2
Germany	527, 852	5, 099, 975	18, 737, 991	. 6	5. 6	13. 9
Other Europe	2, 604. 124	2, 443, 144	5, 873, 660	2. 9	2. 7	4. 3
Canada	34, 093, 277	38, 039, 533	32, 913, 608	38. 7	41. 9	24. 4
Japan	7, 695, 360	1, 918, 839	2, 512, 714	8. 7	2. 1	1. 9
China	4, 962, 689	3, 485, 191	4, 406, 280	5. 6	3. 8	3. 3
Other countries	8, 848, 527	8, 052. 745	11, 488, 311	10. 1	8. 9	8. 4
Fresh—						
Apples—	*Barrels*	*Barrels*	*Barrels*			
Total	2. 032, 241	1, 505, 224	1, 850, 639	100. 0	100. 0	100. 0
Total Europe	1, 920, 514	1, 384, 160	1, 678, 344	94. 5	92. 0	90. 7
United Kingdom	1, 734. 786	1. 255. 079	1, 477, 162	85. 4	83. 4	79. 8
Other Europe	185, 728	129. 081	201, 182	9. 1	8. 6	10. 9
Other countries	111, 727	121, 064	172. 295	5. 5	8. 0	9. 3
Apples—	*Boxes*	*Boxes*	*Boxes*			
Total	6, 198, 199	5, 088, 128	5, 463, 520	100. 0	100. 0	100. 0
Total Europe	4, 880, 813	3, 973. 166	3, 992, 548	78. 7	78. 1	73 1
United Kingdom	3, 661, 826	3, 353, 937	2, 716, 935	59. 1	65. 9	49. 7
Germany	476, 633	291, 068	576, 796	7. 7	5. 7	10. 6
Other Europe	742, 354	328, 161	698, 817	11. 9	6. 5	12 8
Canada	645, 817	443, 278	630, 876	10. 4	8. 7	11. 5
Other countries	671, 569	671, 684	840, 096	10. 9	13. 2	15. 4
Oranges—						
Total	2, 591, 808	2, 196, 614	2, 253. 332	100. 0	100. 0	100. 0
Canada	2, 334, 329	1, 980, 152	2, 007, 102	90. 1	90. 2	89. 1
United Kingdom	80, 074	80, 974	113, 857	3. 1	3. 7	5. 0
Other countries	177, 405	135, 488	132, 373	6. 8	6. 1	5. 9
Canned—	*Pounds*	*Pounds*	*Pounds*			
Total	165, 912, 488	201, 232, 701	266, 672, 514	100. 0	100. 0	100. 0
Total Europe	138, 045, 556	172, 367, 188	233, 545, 271	83. 2	85. 6	87. 6
United Kingdom	120, 481, 946	156, 798, 023	207, 701, 553	72. 6	77. 9	77. 9
Other Europe	17, 563, 610	15, 569, 165	25, 843, 718	10. 6	7. 7	9. 7
Canada	10, 414, 589	9, 412, 330	11, 149, 231	6. 3	4. 7	4. 2
Cuba	6, 573, 053	6, 637, 117	5, 962, 074	4. 0	3. 3	2. 2
Other countries	10, 879, 290	12, 816, 066	16, 015, 938	6. 5	6. 4	6. 0

Table 498.—*Destination of principal farm products exported from the United States, 1924–1926*—Continued

Article and country to which exported	Year ended June 30— 1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Glucose:	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	141, 141, 220	133, 822, 788	165, 589, 145	100.0	100.0	100.0
Total Europe	107, 359, 390	106, 450, 388	131, 194, 145	76.1	77.8	79.2
United Kingdom	79, 681, 081	82, 751, 108	101, 898, 407	56.5	60.5	61.5
Belgium	4, 882, 669	3, 905, 571	4, 269, 629	3.5	2.9	2.6
Italy	4, 075, 938	3, 014, 271	3, 585, 439	2.9	2.2	2.2
Sweden	3, 034, 040	5, 489, 444	5, 414, 005	2.1	4.0	3.3
Other Europe	15, 685, 662	11, 289, 994	16, 026, 665	11.1	8.2	9.6
Egypt	8, 421, 800	4, 708, 500	3, 291, 344	6.0	3.5	2.0
British South Africa	3, 795, 921	3, 793, 678	4, 564, 686	2.7	2.8	2.8
Argentina	3, 293, 295	2, 415, 001	3, 161, 928	2.3	1.8	1.9
Other countries	18, 270, 814	19, 455, 221	23, 377, 042	12.9	14.1	14.1
Grains and grain products:						
Barley—	*Bushels*	*Bushels*	*Bushels*			
Total	11, 208, 733	23, 653, 118	27, 181, 827	100.0	100.0	100.0
Total Europe	11, 019, 631	22, 412, 035	21, 175, 317	98.3	94.8	77.9
United Kingdom	10, 390, 220	8, 578, 118	13, 222, 911	92.7	36.3	48.6
Belgium	172, 015	2, 225, 207	1, 727, 101	1.5	9.4	6.4
Germany	32, 882	7, 775, 309	3, 883, 111	.3	32.9	14.3
Netherlands	32, 124	2, 526, 346	921, 959	.3	10.7	3.4
Other Europe	392, 390	1, 307, 055	1, 420, 235	3.5	5.5	5.2
Canada	4, 094	708, 968	5, 755, 250	(²)	3.0	21.2
Other countries	185, 008	532, 115	251, 260	1.7	2.2	.9
Corn—						
Total	21, 186, 344	8, 460, 120	23, 137, 389	100.0	100.0	100.0
Canada	8, 257, 917	4, 239, 042	8, 071, 251	39.0	50.1	34.9
United Kingdom	4, 448, 073	140, 835	2, 377, 508	21.0	1.7	10 3
Cuba	2, 615, 050	2, 267, 214	2, 096, 678	12.3	26.8	9.1
Netherlands	2, 368, 892	77, 085	3, 509, 805	11.2	.9	15.2
Denmark	885, 964	0	998, 899	4.2	.0	4.3
Germany	672, 586	26, 317	741, 951	3.2	.3	3.2
Mexico	236, 830	1, 366, 317	4, 452, 581	1.6	16.2	19.2
Other countries	1, 600, 132	343, 310	888, 716	7.5	4.0	3.8
Oats—						
Total	1. 148, 776	10, 873, 994	30, 975, 210	100.0	100.0	100.0
Total Europe	162, 695	5, 596, 390	16, 118, 766	14 2	51.5	52.0
United Kingdom	141, 728	1, 168, 465	4, 562, 928	12.3	10.7	14.7
Belgium	0	828, 693	2, 540, 430	.0	7.6	8.2
France	0	473, 752	4, 287, 140	.0	4.4	13.8
Germany	0	1, 301, 519	2, 632, 302	.0	12.0	8.5
Other Europe	20, 967	1, 823, 961	2, 095, 966	1.9	16.8	6.8
Canada	198, 080	3, 750, 916	13, 350, 661	17.2	34.5	43.1
Cuba	545, 321	1, 263, 786	1, 093, 267	47.5	11.6	3.5
Mexico	115, 669	99, 350	127, 173	10.1	.9	.4
Other countries	127, 011	163, 552	285, 343	11.1	1.5	1.0
Oatmeal—	*Pounds*	*Pounds*	*Pounds*			
Total	137, 645, 902	106. 256, 041	156, 804, 616	100.0	100.0	100.0
Total Europe	121, 848, 318	87, 511, 054	130, 684, 153	88.5	82.4	83.3
United Kingdom	54, 154, 012	32, 467, 100	46, 525, 850	39.3	30.6	29.7
Netherlands	24, 185, 907	21, 179, 200	31, 842, 734	17.6	19.9	20.3
Finland	14, 209, 302	11, 307, 910	17, 532, 466	10.3	10.6	11.2
Belgium	4, 075, 992	5, 737, 829	7, 057, 180	3.0	5.4	4.5
Other Europe	25, 223, 105	16, 819, 015	27, 725, 923	18 3	15.9	17.6
Mexico	2, 572, 787	3, 364, 920	3, 992, 692	1.9	3.2	2.5
Other countries	13, 224, 797	15, 380, 007	22, 127, 771	9.6	14.4	14.2
Rice—						
Total	190, 616, 142	74, 601, 900	27, 587, 731	100.0	100.0	100.0
Total Europe	77, 977, 485	43, 667, 094	16, 467, 206	40.9	58.5	59.7
United Kingdom	31, 133, 371	21, 017, 494	8, 071, 226	16.3	28.2	29.2
Belgium	9, 541, 996	8, 397, 548	2, 452, 041	5 0	11.2	8.9
France	6, 526, 164	3, 406, 131	273, 096	3.4	4.6	1.0

² Less than 0.05 per cent.

TABLE 498.—*Destination of principal farm products exported from the United States, 1924–1926*—Continued

Article and country to which exported	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Grains and grain products—Contd.						
Rice—Continued.	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Germany	5, 091, 509	3, 621, 628	3, 417, 308	2. 7	4. 8	12. 4
Other Europe	25, 684, 445	7, 221, 293	2, 253, 535	13. 5	9. 7	8. 2
Japan	59, 702, 798	565, 100	435, 800	31. 3	. 8	1. 6
Canada	23, 146, 501	7, 029, 780	918, 139	12. 1	9. 4	3. 3
South America	16, 553, 594	16, 980, 371	3, 315, 204	8. 7	22. 8	12. 0
Central America	6, 494, 280	3, 422, 689	2, 302, 207	3. 4	4. 6	8. 3
Other countries	6, 741, 484	2, 936, 866	4, 149, 175	3. 6	3. 9	15. 1
Rye—	*Bushels*	*Bushels*	*Bushels*			
Total	17, 704, 561	49, 909, 428	12, 504, 859	100. 0	100. 0	100. 0
Total Europe	9, 106, 555	25, 380, 757	5, 465, 952	51. 4	50. 8	43. 7
Germany	4, 486, 418	8, 344, 029	1, 178, 660	25. 3	16. 7	9. 4
Norway	1, 212, 953	2, 933, 213	1, 498, 831	6. 9	5. 9	12. 0
Netherlands	891, 742	5, 127, 465	1, 233, 983	5. 0	10. 3	9. 9
Russia in Europe	4, 328	4, 348, 411	24, 090	(2)	8. 7	. 2
Other Europe	2, 511, 114	4, 627, 639	1, 530, 388	14. 2	9. 2	12. 2
Canada	8, 579, 023	24, 524, 427	7, 017, 033	48. 5	49. 1	56. 1
Other countries	18, 963	4, 244	21, 874	. 1	. 1	. 2
Rye flour—	*Barrels*	*Barrels*	*Barrels*			
Total	366, 193	55, 475	23, 676	100. 0	100. 0	100. 0
Total Europe	358, 490	47, 891	8, 072	97. 9	86. 3	34. 1
Germany	189, 407	13, 800	0	51. 7	24. 9	. 0
Netherlands	69, 747	7, 544	1, 282	19. 0	13. 6	5. 4
Sweden	27, 688	15, 649	2, 352	7. 6	28. 2	9. 9
France	26, 714	572	0	7. 3	1. 0	. 0
Finland	23, 675	1, 407	1, 122	6. 5	2. 5	4. 7
Denmark	7, 513	2, 813	901	2. 1	5. 1	3. 8
Other Europe	13, 755	6, 106	2, 415	3. 7	11. 0	10. 3
Canada	4, 108	3, 982	4, 067	1. 1	7. 2	17. 2
Palestine and Syria	1, 200	743	2, 170	. 3	1. 4	9. 2
Philippine Islands	20	50	6, 908	(2)	(2)	29. 2
Other countries	2, 366	2, 809	2, 459	. 7	5. 1	10. 3
Wheat—	*Bushels*	*Bushels*	*Bushels*			
Total	78, 793, 034	195, 490, 207	63, 188, 602	100. 0	100. 0	100. 0
Total Europe	38, 823, 760	130, 938, 765	33, 893, 319	49. 3	67. 0	53. 6
United Kingdom	16, 811, 144	40, 274, 402	16, 335, 408	21. 3	20. 6	25. 8
Italy	7, 814, 642	25, 726, 795	2, 876, 814	9. 9	13. 2	4. 5
Belgium	4, 289, 722	15, 178, 448	4, 302, 273	5. 5	7. 8	6. 8
Netherlands	4, 207, 748	16, 727, 326	3, 720, 033	5. 4	8. 6	5. 9
France	2, 460, 865	14, 290, 429	613, 094	3. 1	7. 3	1. 0
Other Europe	3, 239, 639	18, 741, 365	6, 045, 697	4. 1	9. 5	9. 6
Canada	17, 979, 540	55, 596, 684	20, 638, 292	22. 8	28. 4	32. 7
Japan	10, 255, 908	4, 099, 967	5, 178, 050	13. 0	2. 1	8. 2
China	8, 301, 021	374, 065	16, 671	10. 5	. 2	(2)
Other countries	3, 432, 805	4, 480, 726	3, 462, 270	4. 4	2. 3	5. [illegible]
Wheat flour—	*Barrels*	*Barrels*	*Barrels*			
Total	17, 252, 620	13, 896, 343	9, 541, 800	100. 0	100. 0	100. 0
Total Europe	6, 597, 621	8, 203, 633	3, 121, 450	38. 2	59. 0	32. [illegible]
Netherlands	1, 841, 398	1, 781, 479	773, 696	10. 7	12. 8	8.
Germany	1, 488, 329	1, 995, 118	339, 745	8. 6	14. 4	3.
United Kingdom	1, 451, 452	2, 105, 234	859, 657	8. 4	15. 1	9.
Greece	388, 512	581, 694	249, 272	2. 3	4. 2	2.
Other Europe	1, 427, 930	1, 740, 108	899, 080	8. 2	12. 5	9.
China	2, 938, 805	129, 328	489, 258	17. 0	. 9	5.
Hongkong	1, 354, 656	449, 762	370, 548	7. 9	3. 2	3.
Cuba	1, 114, 160	1, 232, 649	1, 143, 759	6. 5	8. 9	12.
Other West Indies [1]	958, 325	728, 195	606, 529	5. 5	5. 2	6.
Kwantung, leased territory	934, 358	42, 773	265, 896	5. 4	. 3	2.
Philippine Islands	585, 419	588, 604	596, 186	3. 4	4. 2	6.
Brazil	530, 160	688, 330	864, 315	3. 1	5. 0	9.
Other countries	1, 676, 756	1, 256, 675	1, 523, 339	9. 7	9. 1	16.

[1] Excludes Bermuda. [2] Less than 0.05 per cent.

TABLE 498.—*Destination of principal farm products exported from the United States, 1924–1926*—Continued

Article and country to which exported	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Hops:	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	20, 460, 705	16, 121, 978	14, 997, 974	100. 0	100. 0	100. 0
Total Europe	15, 768, 672	11, 300, 519	10, 537, 353	77. 1	70. 1	70. 2
United Kingdom	8, 341, 301	5, 758, 018	4, 115, 058	40. 8	35. 7	27. 4
Belgium	5, 290, 342	4, 768, 081	3, 791, 246	25. 9	29. 6	25. 3
Other Europe	2, 137, 029	774, 420	2, 631, 049	10. 4	4. 8	17. 5
Canada	3, 142, 801	3, 318, 211	2, 936, 684	15. 4	20. 6	19. 6
Other countries	1, 549, 232	1, 503, 248	1, 523, 937	7. 5	9. 3	10. 2
Oil cake and oil-cake meal:						
Cottonseed cake—						
Total	200, 927, 154	593, 663, 417	506, 582, 450	100. 0	100. 0	100. 0
Total Europe	200, 353, 124	593, 610, 028	505, 701, 150	99. 7	100. 0	99. 8
Denmark	150, 179, 071	434, 529, 943	408, 113, 755	74. 7	73. 2	80. 6
Germany	39, 142, 550	100, 910, 828	73, 488, 599	19. 5	17. 0	14. 5
Other Europe	11, 031, 503	58, 169, 257	24, 098, 796	5. 5	9. 8	4. 7
Other countries	574, 030	53, 389	881, 300	. 3	(²)	. 2
Cottonseed meal—						
Total	49, 439, 121	291, 711, 396	209, 922, 241	100. 0	100 0	100. 0
Total Europe	44, 216, 235	281, 122, 491	191, 216, 453	89. 4	96. 4	91. 1
United Kingdom	35, 136, 660	134, 854, 960	91, 866, 992	71. 1	46. 2	43. 8
Germany	4, 039, 575	89, 502, 404	47, 012, 826	8. 2	30. 7	22. 4
Norway	3, 920, 000	21, 194, 000	17, 768, 260	7. 9	7. 3	8. 5
Other Europe	1, 120, 660	35, 571, 187	34, 568, 435	2. 2	12. 2	16. 4
Other countries	5, 222, 886	10, 588, 905	18, 705, 788	10. 6	3. 6	8. 9
Linseed or flaxseed cake—						
Total	546, 847, 552	671, 460, 032	577, 907, 698	100. 0	100. 0	100. 0
Total Europe	546, 759, 688	671, 390, 380	577, 890, 870	100. 0	100. 0	100. 0
Netherlands	361, 799 262	395, 438, 820	416, 202, 198	66. 2	58. 9	72. 0
Belgium	86, 467, 843	187, 903, 965	125, 301, 344	15. 8	28. 0	21. 7
United Kingdom	77, 948, 602	71, 037, 746	26, 513, 011	14. 3	10. 6	4. 6
Other Europe	20, 543, 981	17, 069, 849	9, 874, 317	3 7	2. 5	1. 7
Other countries	87, 864	69, 652	16, 828	(²)	(²)	(²)
Oils, vegetable:						
Cottonseed—						
Total	39, 417, 542	53, 260, 616	59, 015, 221	100. 0	100. 0	100. 0
Canada	20, 516, 191	23, 714, 362	36, 387, 317	52 0	44. 5	61. 6
Mexico	8, 376, 445	3, 808, 649	4, 362, 022	21. 3	7. 2	7. 4
Cuba	2, 200, 244	3, 913, 905	4, 869, 430	5. 6	7. 4	8. 3
Norway	1, 824, 917	2, 079, 317	1, 564, 976	4. 6	3 9	2. 7
Argentina	642, 753	1, 573, 118	1, 536, 284	1. 6	3. 0	2. 6
Germany	119, 734	2, 405, 473	287, 749	. 3	4. 5	. 5
Netherlands	0	9, 252, 004	2, 445, 342	. 0	17. 4	4. 1
Other countries	5, 737, 258	6, 513, 788	7, 562, 101	14. 6	12. 1	12. 8
Starch:						
Total	262, 842, 379	214, 247, 051	224, 569, 189	100. 0	100. 0	100. 0
Total Europe	245, 564, 797	195, 476, 556	201, 190, 892	93. 4	91. 2	89. 6
United Kingdom	176, 909, 299	161, 927, 531	162, 051, 298	67. 3	75. 6	72. 2
Germany	24, 612, 455	128, 253	0	9. 4	(²)	0
Netherlands	15, 276, 446	14, 939, 071	19, 511, 453	5 8	7. 0	8. 7
Other Europe	28, 766, 597	12, 481, 701	19, 628, 141	10. 9	8. 6	8. 7
Other countries	17, 277, 582	18, 770, 495	23, 378, 297	6. 6	8. 8	10. 4

² Less than 0.05 per cent.

TABLE 498.—*Destination of principal farm products exported from the United States, 1924–1926*—Continued

Article and country to which exported	Year ended June 30— 1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Sugar, refined:	*Short tons*	*Short tons*	*Short tons*	*Per cent*	*Per cent*	*Per cent*
Total	135, 471	250, 562	299, 992	100. 0	100. 0	100. 0
Total Europe	72, 678	167, 120	217, 089	53. 6	66. 7	72. 4
United Kingdom	40, 190	88, 425	130, 842	29. 7	35. 3	43. 6
France	19, 830	12, 276	12, 201	14. 6	4. 9	4. 1
Greece	4, 445	12, 425	6, 652	3. 3	5. 0	2. 2
Norway	862	11, 705	26, 636	. 6	4. 7	8. 9
Other Europe	7, 351	42, 289	40, 758	5. 4	16. 8	13. 6
Uruguay	23, 638	22, 399	32, 561	17. 4	8. 9	10. 9
Cuba	9, 010	3, 560	723	6. 7	1. 4	. 2
Canada	6, 665	8, 769	4, 544	4. 9	3. 5	1. 5
Newfoundland and Labrador	5, 354	4, 941	3, 994	4. 0	2. 0	1. 3
Argentina	3, 802	16, 969	1, 256	2. 8	6. 8	. 4
Other countries	14, 324	26, 804	39, 825	10. 6	10. 7	13. 3
Tobacco, leaf:	*Pounds*	*Pounds*	*Pounds*			
Total	557, 288, 217	420, 222, 690	528, 131, 750	100. 0	100. 0	100. 0
Total Europe	406, 380, 807	287, 351, 717	343, 879, 694	72. 9	68. 4	65. 1
United Kingdom	161, 237, 383	140, 772, 423	185, 431, 129	28. 9	33. 5	35. 1
Germany	55, 667, 010	19, 126, 377	24, 299, 629	10. 0	4. 6	4. 6
Netherlands	50, 302, 103	15, 873, 273	24, 154, 611	9. 0	3. 8	4. 6
Belgium	35, 065, 458	15, 203, 227	15, 448, 133	6. 3	3. 6	2. 9
France	29, 376, 348	30, 277, 096	54, 496, 510	5. 3	7. 2	10. 3
Italy	25, 206, 508	9, 421, 120	10, 313, 956	4. 5	2. 3	2. 0
Spain	22, 072, 215	32, 745, 565	9, 850	4. 0	7. 8	(1)
Other Europe	27, 453, 787	23, 932, 636	29, 725, 876	4. 9	5. 6	5. 6
China	66, 017, 078	53, 932, 515	98, 142, 376	11. 8	12. 8	18. 6
Australia	24, 388, 905	20, 531, 513	22, 728, 405	4. 4	4. 9	4. 3
Canada	13, 156, 749	11, 658, 680	13, 518, 860	2. 4	2. 8	2. 6
Other countries	47, 344, 678	46, 748, 265	49, 862, 415	8. 5	11. 1	9. 4
Potatoes:	*Bushels*	*Bushels*	*Bushels*			
Total	3, 074, 946	3, 652, 972	1, 823, 571	100. 0	100. 0	100. 0
Cuba	1, 931, 518	1, 869, 415	920, 449	62. 8	51. 2	50. 5
Canada	536, 653	1, 038, 407	342, 672	17. 5	28. 4	18. 8
Mexico	203, 156	168, 479	177, 631	6. 6	4. 6	9. 7
Panama	156, 259	195, 000	151, 152	5. 1	5. 3	8. 3
Other countries	247, 360	381, 671	231, 667	8. 0	10. 5	12. 7

Division of Statistical and Historical Research. Compiled from Monthly Summary of Foreign Commerce of the United States, June, 1925 and 1926, and official records of the Bureau of Foreign and Domestic Commerce.

[1] Less than 0.05 per cent.

TABLE 499.—*Origin of principal agricultural products imported into the United States, 1924–1926*

Article and country of origin	Year ended June 30— 1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS						
Cattle:	*Number*	*Number*	*Number*	*Per cent*	*Per cent*	*Per cent*
Total	154, 736	135, 768	214, 754	100. 0	100. 0	100. 0
Canada	141, 171	121, 802	174, 688	91. 2	89. 7	81. 3
Mexico	12, 853	13, 326	39, 439	8. 3	9. 8	18. 4
Other countries	712	640	627	. 5	. 5	. 3
Horses:						
Total	2, 458	2, 142	2, 762	100. 0	100. 0	100. 0
Canada	1, 900	1, 571	1, 991	77. 3	73. 3	72. 1
United Kingdom	419	374	578	17. 0	17. 5	20. 9
Other countries	139	197	193	5. 7	9. 2	7. 0

Table 490.—*Origin of principal agricultural products imported into the United States, 1924–1926*—Continued

Article and country of origin	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS—con.						
Butter:	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	29, 465, 824	7, 189, 176	6, 440, 448	100. 0	100. 0	100. 0
Total Europe	13, 609, 928	1, 025, 800	1, 753, 944	46. 2	14. 3	27. 2
Denmark	10, 457, 458	839, 629	872, 587	35. 5	11. 7	13. 5
United Kingdom	1, 719, 622	52, 370	691, 242	5. 8	. 7	10. 7
Other Europe	1, 432, 848	133, 801	190, 115	4. 9	1. 9	3. 0
Canada	6, 451, 170	3, 587, 770	1, 111, 118	21. 9	49. 9	17. 3
New Zealand	5, 047, 654	1, 985, 496	2, 232, 101	17. 1	27. 6	34. 7
Argentina	4, 084, 041	414, 778	1, 147, 214	13. 9	5. 8	17. 8
Other countries	273, 031	175, 332	196, 071	. 9	2. 4	3. 0
Cheese:						
Total	66, 596, 766	61, 489, 423	62, 412, 016	100. 0	100. 0	100. 0
Total Europe	61, 310, 224	59, 843, 791	61, 858, 643	92. 1	97. 3	99. 1
Italy	32, 922, 074	32, 842, 899	33, 822, 339	49. 4	53. 4	54. 2
Switzerland	16, 140, 224	15, 222, 229	15, 486, 699	24. 2	24. 8	24. 8
France	4, 418, 938	4, 814, 129	5, 854, 942	6. 8	7. 8	9. 4
Netherlands	3, 048, 284	2, 970, 093	3, 055, 701	4. 6	4. 8	4. 9
Other Europe	4, 780, 704	3, 994, 441	3, 638, 962	7. 1	6. 5	5. 8
Other countries	5, 286, 542	1, 645, 632	553, 373	7. 9	2. 7	. 9
Eggs, in the shell:	*Dozen*	*Dozen*	*Dozen*			
Total	425, 907	682, 381	275, 892	100. 0	100. 0	100. 0
Hongkong	219, 232	256, 073	189, 093	51. 4	37. 5	68. 5
Canada	141, 717	162, 900	69, 207	33. 3	23. 9	25. 1
China	61, 638	252, 491	16, 026	14. 5	37. 0	5. 8
Other countries	3, 320	10, 917	1, 566	. 8	1. 6	. 6
Eggs and egg yolks (dried, frozen, and preserved):	*Pounds*	*Pounds*	*Pounds*			
Total	18, 213, 000	19, 066, 584	25, 679, 410	100. 0	100. 0	100. 0
China	17, 365, 708	17, 579, 857	21, 927, 886	95. 3	92. 2	85. 4
Other countries	847, 292	1, 486, 727	3, 751, 524	4. 7	7. 8	14. 6
Egg albumen:						
Total	7, 277, 257	4, 363, 185	9, 609, 625	100. 0	100. 0	100. 0
China	7, 166, 108	4, 050, 456	8, 676, 424	98. 5	92. 8	90. 3
Other countries	111, 149	312, 729	933, 201	1. 5	7. 2	9. 7
Hides and skins other than furs:						
Calfskins, dry—						
Total	10, 754, 038	8, 087, 307	6, 102, 552	100. 0	100. 0	100. 0
Argentina	1, 673, 587	997, 043	232, 978	15. 6	12. 3	3. 8
Latvia	1, 302, 671	725, 960	673, 787	12. 1	9. 0	11. 0
Finland	1, 084, 443	1, 002, 517	704, 245	10. 1	12. 4	11. 5
New Zealand	1, 011, 853	906, 925	379, 682	9. 4	11. 2	6. 2
Uruguay	774, 680	331, 831	1, 331	7. 2	4. 1	(1)
Canada	735, 369	486, 943	364, 227	6. 8	6. 0	6. 0
Netherlands	509, 728	434, 741	349, 174	4. 7	5. 4	5. 7
United Kingdom	476, 850	98, 311	113, 643	4. 4	1. 2	1. 9
Denmark	475, 374	194, 692	203, 755	4. 4	2. 4	3. 3
Australia	407, 497	186, 621	76, 906	3. 8	2. 3	1. 3
Norway	390, 814	801, 198	573, 310	3. 6	9. 9	9. 4
Germany	318, 101	149, 963	675, 255	3. 0	1. 8	11. 1
France	198, 582	308, 076	13, 346	1. 8	3. 8	. 2
Poland	135, 176	366, 798	341, 932	1. 3	4. 5	5. 6
Sweden	128, 713	280, 253	143, 935	1. 2	3. 5	2. 4
Russia in Europe	74, 518	11, 531	249, 914	. 7	. 1	4. 1
Other countries	1, 056, 182	803, 904	1, 005, 132	9. 9	10. 1	16. 5
Calfskins, wet—						
Total	18, 450, 876	23, 154, 631	21, 513, 065	100. 0	100. 0	100. 0
Canada	5, 412, 337	5, 519, 284	5, 338, 038	29. 3	23. 8	24. 8
France	3, 395, 954	3, 937, 049	3, 201, 210	18. 4	17. 0	14. 9
United Kingdom	2, 154, 343	523, 090	616, 914	11. 7	2. 3	2. 9
Sweden	1, 295, 525	2, 279, 794	1, 821, 281	7. 0	9. 8	8. 5

[1] Less than 0.05 per cent.

TABLE 499.—*Origin of principal agricultural products imported into the United States, 1924–1926*—Continued

Article and country of origin	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS—con.						
Hides and skins other than furs—con.						
Calfskins, wet—Continued.	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Latvia	887, 225	1, 149, 498	432, 677	4. 8	5. 0	2. 0
Finland	639, 043	368, 956	768, 073	3. 5	1. 6	3. 6
Switzerland	515, 619	795, 350	1, 225, 710	2. 8	3. 4	5. 7
Denmark	477, 312	1, 037, 827	876, 990	2. 6	4. 5	4. 1
Netherlands	425, 084	938, 844	778, 610	2. 3	4. 1	3. 6
New Zealand	392, 815	1, 233, 654	1, 111, 839	2. 1	5. 3	5. 2
Italy	373, 937	327, 414	492, 145	2. 0	1. 4	2. 3
Poland	145, 102	1, 650, 220	796, 798	. 8	7. 1	3. 7
Belgium	129, 756	328, 784	604, 420	. 7	1. 4	2. 8
Other countries	2, 206, 824	3, 064, 887	3, 448, 360	12. 0	13. 3	15. 9
Cattle hides, dry— Total	18, 111, 934	14, 376, 218	14, 505, 654	100. 0	100. 0	100. 0
Colombia	6, 271, 063	5, 293, 983	4, 666, 470	34. 6	36. 8	32. 2
Argentina	2, 509, 740	2, 040, 226	3, 171, 028	13. 9	14. 2	21. 9
Venezuela	2, 114, 545	1, 924, 866	2, 001, 780	11. 7	13. 4	13. 8
Canada	1, 466, 187	1, 114, 133	552, 941	8. 1	7. 7	3. 8
China	1, 028, 209	52, 094	336, 189	5. 7	. 4	2. 3
France	604, 716	266, 100	107, 220	3. 3	1. 8	. 7
Australia	488, 810	394, 849	18, 130	2. 7	2. 7	. 1
Nicaragua	445, 524	475, 027	354, 339	2. 5	3. 3	2. 4
Uruguay	347, 144	23, 148	85, 821	1. 9	. 2	. 6
Honduras	214, 683	181, 499	174, 055	1. 2	1. 3	1. 2
Mexico	240, 454	306, 951	301, 895	1. 3	2. 1	2. 1
United Kingdom	191, 395	179, 745	111, 332	1. 1	1. 3	. 8
British India	82, 965	406, 575	206, 123	. 5	2. 8	1. 4
Other countries	2, 106, 499	1, 716, 332	2, 418, 33[illegible]	11. 5	12. 0	16. 7
Cattle hides, wet— Total	158, 362, 830	184, 933, 515	140, 568, 128	100. 0	100. 0	100. 0
Argentina	99, 660, 875	113, 565, 163	79, 639, 097	62. 9	61. 4	56. 6
Canada	28, 602, 925	36, 084, 396	35, 421, 461	18. 1	19. 5	25. 2
Uruguay	11, 714, 089	8, 614, 600	6, 252, 618	7. 4	4. 7	4. 4
Other countries	18, 384, 941	26, 669, 356	19, 254, 952	11. 6	14. 4	13. 8
Goat and kid skins, dry— Total	51, 810, 858	57, 202, 066	76, 618, 847	100. 0	100. 0	100. 0
British India	13, 173, 680	17, 190, 066	26, 322, 401	25. 4	30. 1	34. 4
China	8, 636, 578	8, 467, 982	11, 355, 538	16. 7	14. 8	14. 8
Brazil	4, 132, 230	3, 857, 513	3, 932, 950	8. 0	6. 7	5. 1
Spain	3, 158, 354	1, 641, 586	2, 798, 252	6. 1	2. 9	3. 6
Argentina	3, 130, 925	3, 668, 173	4, 066, 664	6. 0	6. 4	5. 3
Aden	2, 855, 206	2, 372, 301	4, 040, 458	5. 5	4. 1	5. 3
Mexico	2, 804, 017	4, 074, 061	4, 750, 896	5. 4	7. 1	6. 2
Dutch East Indies	1, 634, 425	1, 436, 024	2, 018, 199	3. 2	2. 5	2. 6
Venezuela	1, 438, 685	1, 403, 367	1, 259, 912	2. 8	2. 5	1. 6
United Kingdom	1, 263, 918	1, 992, 246	1, 656, 763	2. 4	3. 5	2. 2
France	632, 390	1, 372, 174	1, 278, 484	1. 2	2. 4	1. 7
Other countries	8, 950, 450	9, 726, 573	13, 138, 330	17. 3	17. 0	17. 2
Goatskins, wet— Total	14, 069, 981	8, 754, 126	9, 865, 029	100. 0	100. 0	100. 0
British India	12, 989, 559	7, 410, 757	8, 639, 410	92. 3	84. 7	87. 6
Other countries	1, 080, 422	1, 343, 369	1, 225, 619	7. 7	15. 3	12. 4
Kip skins, dry— Total	3, 540, 851	1, 896, 431	1, 218, 435	100. 0	100. 0	100. 0
Argentina	2, 381, 371	345, 406	315, 073	67. 3	18. 2	25. 9
United Kingdom	297, 708	187, 564	131	8. 4	9. 9	(1)
France	154, 251	131, 410	118, 675	4. 4	6. 9	9. 7
Canada	140, 922	433, 333	211, 947	4. 0	22. 8	17. 4
Sweden	105, 950	82, 070	69, 281	3. 0	4. 3	5. 7
British India	85, 425	102, 560	. 0	2. 4	5. 4	. 0
Denmark	0	156, 638	87, 222	. 0	8. 3	7. 2
Poland and Danzig	0	147, 925	. 0	. 0	7. 8	. 0
Other countries	306, 247	226, 426	264, 724	8. 6	12. 0	21. 7

[1] Less than 0.05 per cent.

TABLE 499.—*Origin of principal agricultural products imported into the United States, 1924–1926*—Continued

Article and country of origin	Year ended June 30— 1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS—con.						
Hides and skins other than furs—Con.						
Kip skins, wet—,	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	7,857,723	4,997,279	4,184,900	100.0	100.0	100.0
Argentina	2,927,069	844,850	74,548	37.3	16.9	1.8
France	1,801,337	1,997,646	1,022,508	22.9	40.0	24.4
Canada	1,010,218	1,184,614	1,465,166	12.9	23.7	35.0
United Kingdom	464,106	128,609	107,328	5.9	2.6	2.6
China	435,059	9,517	0	5.5	.2	.0
Netherlands	226,589	73,776	463,522	2.9	1.5	11.1
Belgium	102,272	39,284	120,457	1.3	.8	2.9
Sweden	93,113	0	27,600	1.2	.0	.6
Italy	58,797	348,256	242,203	.7	6.9	5.8
Other countries	739,163	370,727	661,568	9.4	7.4	15.8
Sheep and lamb skins, dry and wet—Total	61,445,733	62,303,024	54,374,505	100.0	100.0	100.0
New Zealand	12,917,279	16,638,910	12,160,625	[illegible]	26.7	22.4
United Kingdom	12,700,231	13,409,930	9,160,451	20.7	21.5	16.8
Argentina	12,442,382	10,531,498	9,267,010	20.2	16.9	17.0
Brazil	3,559,447	1,986,765	2,378,041	5.8	3.2	4.4
Spain	3,056,921	1,155,008	1,861,956	5.0	1.9	3.4
Uruguay	2,757,060	1,458,531	2,510,764	4.5	2.3	4.6
Australia	2,674,258	2,535,934	3,095,935	4.4	4.1	5.7
Chile	1,774,592	1,811,020	1,405,892	2.9	2.9	2.6
Canada	1,462,469	2,039,042	1,827,023	2.4	3.3	3.4
British South Africa	1,366,995	1,466,241	3,780,932	2.2	2.4	7.0
Other countries	6,734,099	9,270,145	6,925,876	10.9	14.8	12.7
Fibers, animal:						
Silk, raw, in skeins reeled from cocoon—Total	46,171,863	59,137,648	64,290,934	100.0	100.0	100.0
Japan	34,445,020	46,855,276	51,784,344	74.6	79.2	80.5
China	8,718,404	8,757,498	9,519,211	18.9	14.8	14.8
Other countries	3,008,439	3,524,874	2,987,379	6.5	6.0	4.7
Wool, unmanufactured—						
Carpet wool—Total	118,375,163	138,461,126	118,079,595	100.0	100.0	100.0
China	57,718,076	56,590,990	35,667,983	48.8	40.9	30.2
United Kingdom	29,396,237	45,521,281	39,152,834	24.8	32.9	33.2
Argentina	7,758,910	4,592,577	6,884,949	6.6	3.3	5.8
Palestine and Syria	4,250,144	5,223,282	7,691,340	3.6	3.8	6.5
British India	3,432,146	5,929,067	6,803,783	2.9	4.3	5.8
Other countries	15,819,650	20,603,929	21,878,706	13.3	14.8	18.5
Clothing wool—Total	12,819,736	24,445,673	16,656,587	100.0	100.0	100.0
United Kingdom	4,236,568	6,882,070	4,146,723	33.0	28.2	24.9
Argentina	3,101,080	7,636,574	2,730,592	24.2	31.2	16.4
Canada	1,145,330	1,328,745	842,696	8.9	5.4	5.0
Uruguay	1,137,585	2,596,112	1,016,231	8.9	10.6	6.1
Australia	1,104,650	1,755,787	4,559,465	8.6	7.2	27.4
Chile	674,544	1,567,877	727,272	5.3	6.4	4.4
Other countries	1,419,979	2,678,508	2,633,608	11.1	11.0	15.8
Combing wool—Total	103,002,879	117,990,941	203,977,235	100.0	100.0	100.0
Australia	33,180,931	37,101,110	59,481,070	32.2	31.5	29.2
United Kingdom	23,751,430	19,527,037	27,313,822	23.1	16.6	13.4
Argentina	19,787,998	18,911,034	37,292,018	19.2	16.0	18.3
Uruguay	6,572,372	17,504,090	37,591,669	6.4	14.8	18.4
New Zealand	5,884,796	9,868,767	16,441,239	5.7	8.4	8.1
Other countries	13,825,352	15,078,903	25,857,417	13.4	12.7	12.6
Hair of the Angora goat (mohair), alpaca, etc.—Total	4,924,581	3,808,642	6,738,403	100.0	100.0	100.0
United Kingdom	1,852,429	1,083,648	2,530,082	37.6	28.4	37.5
Turkey in Europe	1,255,881	225,137	1,730,622	25.5	5.9	25.7
Peru	911,394	692,930	84,940	18.5	18.2	1.3
British South Africa	715,621	1,126,932	2,318,777	14.5	29.6	34.4
China	134,818	524,401	55,262	2.7	13.8	.8
Other countries	54,438	155,594	18,720	1.2	4.1	.3

TABLE 499.—*Origin of principal agricultural products imported into the United States, 1924–1926*—Continued

Article and country of origin	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
ANIMALS AND ANIMAL PRODUCTS—con.						
Sausage casings:	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	20, 386, 106	17, 754, 509	19, 271, 422	100. 0	100. 0	100. 0
Argentina	6, 857, 595	5, 137, 800	4, 690, 000	33. 6	28. 9	24. 3
China	2, 833, 411	2, 349, 835	2, 989, 430	13. 9	13. 2	15. 5
Canada	2, 257, 786	3, 624, 306	3, 715, 161	11. 1	20. 4	19. 3
Australia	1, 419, 351	1, 563, 554	2, 108, 989	7. 0	8. 8	10. 9
New Zealand	1, 201, 296	1, 126, 911	1, 356, 529	5. 9	6. 3	7. 0
Uruguay	1, 119, 015	517, 451	500, 841	5. 5	2. 9	2. 6
Germany	1, 027, 328	481, 256	783, 828	5. 0	2. 7	4. 1
Other countries	3, 670, 324	2, 953, 396	3, 126, 644	18. 0	16. 8	16. 3
VEGETABLE PRODUCTS						
Cocoa or cacao beans:						
Total	382, 971, 242	382, 570, 001	417, 059, 594	100. 0	100. 0	100. 0
British West Africa	152, 532, 542	138, 513, 157	135, 050, 739	39. 8	36. 2	32. 4
Brazil	71, 736, 843	71, 818, 467	86, 110, 263	18. 7	18. 8	20. 6
Dominican Republic	42, 368, 024	46, 926, 416	49, 954, 687	11. 1	12. 3	12. 0
British West Indies	35, 004, 010	36, 613, 472	46, 061, 358	9. 1	9. 5	11. 0
Ecuador	30, 310, 474	28, 999, 365	34, 385, 076	7. 9	7. 6	8. 2
Other countries	51, 019, 349	59, 701, 124	65, 497, 471	13. 4	15. 6	15. 8
Coffee:						
Total	1,429,616,859	1,279,569,534	1,437,364,185	100. 0	100. 0	100. 0
Brazil	950, 950, 167	860, 269, 172	995, 957, 475	66. 5	67. 2	69. 3
Colombia	254, 381, 159	223, 169, 914	207, 469, 488	17. 8	17. 4	14. 4
Central America	90, 816, 554	65, 974, 578	94, 812, 478	6. 4	5. 1	6. 6
Other countries	133, 468, 979	130, 155, 870	139, 124, 744	9. 3	10. 3	9. 7
Fibers, vegetable:						
Cotton, raw—						
Total	146, 023, 533	155, 092, 298	161, 673, 872	100. 0	100. 0	100. 0
Egypt	78, 631, 055	91, 930, 193	112, 632, 576	53. 8	59. 3	69. 7
China	21, 577, 342	15, 941, 770	12, 786, 810	14. 8	10. 3	7. 9
British India	16, 302, 430	13, 044, 278	11, 123, 282	11. 2	8. 4	6. 9
Mexico	13, 442, 658	22, 287, 221	11, 776, 265	9. 2	14. 4	7. 3
Peru	9, 955, 561	5, 678, 348	7, 469, 299	6. 8	3. 6	4. 6
Other countries	6, 114, 487	6, 210, 488	5, 885, 640	4. 2	4. 0	3. 6
Flax, unmanufactured—	*Tons*	*Tons*	*Tons*			
Total	4, 885	4, 315	7, 104	100. 0	100. 0	100. 0
Total Europe	3, 163	3, 563	6, 543	64 7	82. 6	92 1
United Kingdom	1, 699	1, 595	1, 759	34. 8	37. 0	24. 8
Latvia	341	455	215	7. 0	10. 5	3. 0
Italy	297	154	181	6. 1	3. 6	2. 5
Belgium	290	520	630	5. 9	12. 0	8. 9
Estonia	176	68	1, 126	3. 6	1. 6	15. 8
Netherlands	170	141	439	3. 5	3. 3	6. 2
Russia in Europe	108	198	1, 565	2. 2	4. 6	22. 0
Germany	2	250	296	(1)	5. 8	4. 2
Other Europe	80	182	332	1. 6	4. 2	4. 7
Canada	1, 292	499	263	26. 4	11. 6	3. 7
Japan	316	153	125	6. 5	3. 5	1. 8
Other countries	114	100	173	2. 4	2. 3	2. 4
Manila fiber—						
Total	98, 032	73, 040	61, 977	100. 0	100. 0	100. 0
Philippine Islands	97, 261	72, 527	61, 665	99. 2	99. 3	99. 5
Other countries	771	513	312	. 8	. 7	. 5
Sisal and henequen—						
Total	96, 969	145, 981	125, 619	100. 0	100. 0	100. 0
Mexico	71, 162	116, 374	95, 948	73 4	79. 7	76. 4
Dutch East Indies	11, 172	13, 742	14, 410	11. 5	9. 4	11. 5
Other countries	14, 635	15, 865	15, 261	15. 1	10. 9	12. 1

[1] Less than 0.05 per cent.

TABLE 499.—*Origin of principal agricultural products imported into the United States, 1924–1926*—Continued

Article and country of origin	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Fruits:						
Dried—						
Currants—	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	17, 155, 431	15, 064, 155	14, 772, 950	100. 0	100. 0	100. 0
Total Europe	17, 004, 886	14, 887, 482	14, 634, 851	99. 1	98. 8	99. 1
Greece	16, 809, 739	14, 675, 834	14, 032, 351	98. 0	97. 4	95. 0
Other Europe	195, 147	211, 648	602, 500	1. 1	1. 4	4. 1
Other countries	150, 545	176, 673	138, 099	. 9	1. 2	. 9
Dates—						
Total	44, 142, 682	63, 444, 020	70, 194, 915	100. 0	100. 0	100. 0
Hejaz, Arabia, etc	36, 530, 233	35, 498, 330	59, 622, 822	8[illegible]	56. 0	84. 9
Turkey in Asia	2, 810, 883	4, 320, 657	191, 239	6. 4	6. 8	. 3
United Kingdom	1, 581, 824	12, 870, 897	5, 799, 934	3. 6	20. 3	8. 3
Palestine and Syria	340	8, 668, 075	0	(1)	13. 7	0
Other countries	3, 219, 402	2, 086, 061	4, 580, 920	7. 2	3. 2	6. 5
Figs—						
Total	31, 667, 740	45, 259, 009	43, 680, 918	100. 0	100. 0	100. 0
Turkey in Asia	19, 688, 606	22, 157, 498	20, 588, 819	62. 2	48. 9	47. 1
Greece	4, 456, 595	7, 596, 281	4, 615, 051	14. 1	16. 8	10. 6
Portugal	3, 866, 124	4, 794, 097	8, 366, 473	12. 2	10. 6	19. 2
Italy	1, 526, 320	3, 793, 447	3, 721, 738	4. 8	8. 4	8. 5
Other countries	2, 130, 095	6, 917, 686	6, 388, 837	6. 7	15. 3	14. 6
Fresh—						
Bananas—	*Bunches*	*Bunches*	*Bunches*			
Total	44, 935, 105	50, 513, 331	58, 550, 364	100. 0	100. 0	100. 0
Central America	27, 976, 873	31, 981, 525	34, 839, 713	62. 3	63. 3	59. 5
Jamaica	9, 406, 524	10, 635, 004	14, 766, 129	20. 9	21. 0	25. 2
Colombia	2, 343, 982	2, 260, 400	2, 430, 580	5. 2	4. 5	4. 2
Cuba	2, 277, 353	2, 118, 885	2, 931, 993	5. 1	4. 2	5. 0
Other countries	2, 930, 373	3, 517, 517	3, 581, 949	6. 5	7. 0	6. 1
Lemons [2]—	*Boxes*	*Boxes*	*Boxes*			
Total	1, 017, 532	1, 263, 915	1, 247, 479	100. 0	100. 0	100. 0
Total Europe	1, 015, 303	1, 261, 900	1, 244, 137	99. 8	99. 8	99. 7
Italy	1, 010, 100	1, 260, 865	1, 235, 358	99. 3	99. 8	90. 0
Other Europe	5, 203	1, 035	8, 779	. 5	(1)	. 7
Other countries	2, 229	2, 015	3, 342	. 2	. 2	. 3
Olives—	*Gallons*	*Gallons*	*Gallons*			
Total	6, 847, 770	5, 900, 866	5, 992, 179	100. 0	100. 0	100. 0
Total Europe	6, 784, 549	5, 874, 317	5, 949, 510	99. 1	99. 6	99. 3
Spain	5, 029, 641	4, 258, 835	4, 465, 514	73. 4	72. 2	74. 5
Greece	1, 247, 689	1, 070, 493	1, 126, 839	18. 2	18. 1	18. 8
Other Europe	507, 219	544, 989	357, 157	7. 5	9. 3	6. 0
Other countries	63, 221	26, 549	42, 669	. 9	. 4	. 7
Grains:						
Rice, cleaned—	*Pounds*	*Pounds*	*Pounds*			
Total	32, 192, 744	41, 639, 466	92, 629, 003	100. 0	100. 0	100. 0
Hongkong	21, 266, 678	24, 941, 943	21, 300, 842	66. 1	59. 9	23. 0
Germany	3, 270, 003	3, 019, 987	10, 038, 181	10. 2	7. 2	10. 8
Netherlands	1, 823, 281	4, 858, 073	34, 692, 261	5. 7	11. 7	37. 4
French Indo-China	1, 770, 000	417, 500	0	5. 5	1. 0	. 0
China	1, 636, 611	1, 673, 819	1, 441, 980	5. 1	4. 0	1. 6
Italy	527, 952	632, 927	3, 663, 967	1. 6	1. 5	4. 0
British India	523, 870	2, 006, 091	2, 879, 469	1. 6	4. 8	3. 1
Mexico	187, 167	2, 853, 159	4, 169, 566	. 6	6. 9	4. 5
Other countries	1, 187, 182	1, 235, 967	14, 442, 737	3. 6	3. 0	15. 6

[1] Less than 0.05 per cent.

[2] Boxes of 74 pounds net.

Table 499.—*Origin of principal agricultural products imported into the United States, 1924–1926*—Continued

Article and country of origin	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Grains—Continued.						
Rice, uncleaned—	*Pounds*	*Pounds*	*Pounds*	*Per cen*	*Per cent*	*Per cent*
Total	5, 117, 505	12, 024, 355	30, 748, 894	100. 0	100. 0	100. 0
Mexico	2, 543, 163	360	13, 707, 632	49. 7	(1)	44. 6
Japan	2, 326, 042	11, 603, 666	11, 685, 654	45. 5	96. 5	38. 0
Other countries	248, 300	420, 329	5, 355, 608	4. 8	3. 5	17. 4
Rice flour and meal—						
Total	899, 940	4, 013, 326	6, 587, 893	100. 0	100. 0	100. 0
Japan	388, 278	416, 972	439, 554	43. 1	10. 4	6. 7
Hongkong	201, 446	166, 236	101, 908	22. 4	4. 1	1. 5
Germany	159, 040	2, 803, 141	164, 499	17. 7	69. 9	2. 5
Netherlands	60, 000	0	3, 188, 955	6. 7	. 0	48. 4
United Kingdom	48, 500	112	336	5. 4	(1)	(1)
Mexico	0	605, 784	2, 545, 659	. 0	15. 1	38. 6
Other countries	42, 676	21, 081	146, 982	4. 7	. 5	2. 3
Wheat—	*Bushels*	*Bushels*	*Bushels*			
Total	27, 283, 905	6, 169, 193	15, 582, 502	100 0	100. 0	100. 0
Canada	27, 276, 774	6, 169, 024	15, 493, 643	100 0	100. 0	99. 4
Other countries	7, 131	169	88, 859	(1)	(1)	. 6
Wheat flour—	*Barrels*	*Barrels*	*Barrels*			
Total	169, 132	6, 718	17, 405	100. 0	100. 0	100. 0
Canada	168, 799	6, 219	17, 026	99 8	92. 6	97. 8
Other countries	333	499	379	. 2	7. 4	2. 2
Nuts:						
Almonds, shelled—	*Pounds*	*Pounds*	*Pounds*			
Total	23, 411, 085	21, 362, 443	18, 574, 788	100 0	100. 0	100. 0
Total Europe	23, 250, 718	21, 180, 358	18, 279, 663	99 3	99. 1	98 4
Spain	14, 129, 475	8, 828, 325	12, 800, 749	60 4	41 3	68. 9
Italy	8, 258, 533	10, 522, 034	4, 155, 786	35. 3	49. 3	22 4
France	763, 950	1, 541, 843	1, 141, 873	3. 3	7. 2	6. 1
Other Europe	98, 760	288, 156	181, 255	. 3	1. 3	1. 0
Other countries	160, 367	182, 085	295, 125	. 7	. 9	1. 6
Almonds, not shelled—						
Total	2, 654, 105	3, 801, 715	3, 703, 442	100 0	100. 0	100. 0
Total Europe	2, 609, 249	3, 793, 772	3, 670, 259	98. 3	99. 8	99. 1
Spain	2, 238, 057	3, 008, 164	3, 126, 831	84. 3	79. 1	84. 4
France	281, 206	475, 152	335, 413	10. 6	12. 5	9. 1
Other Europe	89, 986	310, 456	208, 015	3. 4	8. 2	5. 6
Other countries	44, 856	7, 943	33, 183	1. 7	. 2	. 9
Filberts, shelled—						
Total	7, 352, 988	4, 344, 743	6, 668, 687	100. 0	100. 0	100. 0
Total Europe	7, 164, 985	4, 212, 068	6, 489, 476	97. 4	96. 9	97. 3
Spain	3, 017, 454	2, 197, 158	669, 263	41. 0	50. 6	10. 0
Turkey in Europe	2, 065, 648	774, 966	2, 324, 811	28. 1	17. 8	34. 9
France	1, 474, 318	923, 815	2, 150, 073	20. 1	21. 3	32. 2
Other Europe	607, 565	316, 129	1, 345, 329	8. 2	7. 2	20. 2
Other countries	188, 003	132, 675	179, 211	2. 6	3. 1	2. 7
Filberts, not shelled—						
Total	14, 110, 659	9, 325, 619	11, 104, 508	100. 0	100. 0	100. 0
Total Europe	14, 110, 155	9, 324, 666	11, 032, 361	100. 0	100. 0	99. 4
Italy	14, 037, 698	7, 184, 872	8, 545, 753	99. 5	77. 0	77. 0
Spain	44, 932	2, 090, 345	713, 751	. 3	22. 4	6. 4
Other Europe	27, 525	49, 449	1, 772, 857	. 2	. 6	16. 0
Other countries	504	953	72, 147	(1)	(1)	. 6

[1] Less than 0.05 per cent.

TABLE 499.—*Origin of principal agricultural products imported into the United States, 1924–1926*—Continued

Article and country of origin	Year ended June 30—					
	1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Nuts—Continued.						
Peanuts, shelled—	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	48, 309, 746	85, 609, 627	33, 666, 345	100. 0	100. 0	100. 0
China	42. 043, 532	83, 786, 251	32, 350, 814	87 0	97. 9	96. 1
Other countries	6, 266, 214	1, 823, 376	1, 315, 531	13. 0	2. 1	3. 9
Peanuts, not shelled—						
Total	3, 560, 624	11, 371, 433	3, 539, 031	100. 0	100. 0	100. 0
China	3, 055, 120	9, 357, 234	2, 837, 436	85 8	82. 3	80. 2
Japan, including Chosen	409, 590	1, 543, 498	235, 181	11 5	13. 6	6. 6
Other countries	95, 914	470, 701	466, 414	2 7	4. 1	13. 2
Walnuts, shelled—						
Total	18, 764, 784	23, 639, 590	22, 679, 527	100. 0	100. 0	100. 0
Total Europe	16, 556, 474	19, 629, 649	19, 296, 360	88 2	83. 0	85. 1
France	15, 233, 834	17, 050, 910	17, 474, 270	81 2	72. 1	77. 0
Other Europe	1, 322, 640	2, 578, 739	1, 822, 090	7 0	10. 9	8. 1
China	1, 756, 451	3, 424, 349	3, 019, 725	9. 4	14. 5	13. 3
Other countries	451, 859	585, 592	363, 442	2. 4	2. 5	1. 6
Walnuts, not shelled—						
Total	18, 244, 936	30, 912, 253	21, 472, 321	100 0	100. 0	100. 0
Total Europe	15, 856, 749	23, 045, 940	18, 408, 272	86. 9	74. 6	85. 7
Italy	10, 389, 368	11, 477, 343	9, 063, 643	56 9	37. 1	42. 2
France	4, 622, 757	9, 222, 391	6, 798, 236	25. 3	29. 8	31. 7
Other Europe	844, 624	2, 346, 206	2, 546, 393	4. 7	7. 7	11. 8
China	1, 951, 850	6, 332, 116	2, 395, 231	10. 7	20. 5	11. 2
Other countries	436, 337	1, 534, 197	668, 818	2. 4	4. 9	3. 1
Oils, vegetable:						
Coconut oil—product of Philippine Islands	181, 013, 122	250, 120, 748	200, 878, 120	100. 0	100. 0	100. 0
Olive oil, edible—						
Total	80, 880, 745	80, 302, 411	83, 178, 014	100. 0	100. 0	100. 0
Total Europe	79, 724, 564	78, 535, 505	81, 665, 681	98 6	97. 8	98. 2
Italy	52, 076, 274	58, 380, 486	57, 821, 441	64 4	72 7	69. 5
Spain	19, 560, 602	11, 323, 964	17, 117, 487	24. 2	14. 1	20. 6
France	6, 117, 812	6, 050, 908	5, 646, 690	7. 6	7. 5	6. 8
Other Europe	1, 969, 876	2, 780, 147	1, 050, 063	2. 4	3. 5	1. 3
Other countries	1, 156, 181	1, 766, 906	1, 512, 333	1. 4	2. 2	1. 8
Soy-bean oil—						
Total	17, 631, 210	20, 433, 843	17, 400, 815	100. 0	100. 0	100. 0
Kwantung	16, 034, 460	15, 491, 975	13, 800, 966	90. 9	75. 8	79. 3
Japan	21, 010	180, 360	2, 801, 240	. 1	. 9	16. 1
China	1, 534, 950	3, 431, 070	1, 143	8. 7	16. 8	(1)
Other countries	40, 790	1, 330, 438	797, 466	. 3	6. 5	4. 6
Oilseeds:						
Copra, not prepared—						
Total	299, 773, 531	328, 651, 513	392, 759, 250	100. 0	100. 0	100. 0
Philippine Islands	244, 927, 542	260, 076, 109	248, 587, 006	81. 7	79. 1	63. 3
British Oceania	22, 012, 892	8, 912, 415	27, 600, 030	7. 3	2. 7	7. 0
French Oceania	18, 879, 057	27, 131, 937	24, 798, 906	6. 3	8. 3	6. 3
British East Indies	3, 162, 347	13, 302, 888	70, 385, 963	1. 1	4. 0	17. 9
Other countries	10, 791, 693	19, 228, 164	21, 387, 345	3. 6	5. 9	5. 5
Flaxseed—	*Bushels*	*Bushels*	*Bushels*			
Total	19, 576, 750	13, 419, 087	19, 353, 747	100. 0	100. 0	100. 0
Argentina	16, 169, 352	8, 255, 176	16, 374, 900	82. 6	61. 5	84. 6
Canada	3, 365, 498	5, 137, 183	2, 949, 456	17. 2	38. 3	15. 2
Other countries	41, 900	26, 728	29, 391	. 2	. 2	. 2

[1] Less than 0.05 per cent.

TABLE 499.—*Origin of principal agricultural products imported into the United States, 1924-1926*—Continued

Article and country of origin	Year ended June 30— 1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Seeds, except oilseeds:						
Clover seed—						
Clover, red—	*Pounds*	*Pounds*	*Pounds*	*Per cent*	*Per cent*	*Per cent*
Total	24, 287, 371	6, 494, 062	19, 589, 234	100. 0	100. 0	100. 0
Total Europe	23, 024, 951	6, 147, 512	18, 898, 918	94. 8	94. 7	96 5
France	17, 094, 803	4, 842, 935	18, 336, 326	70. 4	74. 6	93. 6
United Kingdom	3, 883, 926	409, 223	100	16. 0	6. 3	(1)
Italy	974, 564	194, 356	65, 464	4. 0	3. 0	. 3
Germany	733, 345	519, 201	376, 514	3. 0	8. 0	1. 9
Other Europe	338, 313	181, 797	120, 514	1. 4	2. 8	. 7
Other countries	1, 262, 420	346, 550	690, 316	5. 2	5. 3	3. 5
All other, including alsike, crimson, and all other clover—						
Total	28, 804, 138	22, 893, 402	29, 093, 290	100. 0	100. 0	100 0
Total Europe	10, 121, 777	6, 273, 103	8, 404, 578	35. 1	27. 4	28. 9
France	6, 080, 866	4, 520, 774	5, 825, 591	21. 1	19. 7	20. 0
Germany	1, 431, 992	868, 356	964, 519	5. 0	3. 8	3 3
Other Europe	2, 608, 979	883, 973	1, 614, 468	9. 0	3. 9	5. 6
Canada	18, 513, 745	16, 614, 679	20, 679, 057	64. 3	72. 6	71. 1
Other countries	168, 616	5, 620	9, 655	. 6	(1)	(1)
Spices:						
Pepper, unground—						
Total	27, 335, 450	37, 505, 374	28, 221, 271	100. 0	100. 0	100 0
Dutch East Indies	21, 793, 822	27, 297, 296	12, 745, 003	79. 8	72. 8	45. 2
Straits Settlements	3, 073, 238	4, 249, 780	2, 419, 441	11. 2	11. 3	8. 6
British India	1, 310, 831	3, 496, 047	9, 533, 350	4. 8	9. 3	33 8
Other countries	1, 157, 559	2, 462, 251	3, 523, 477	4. 2	6. 6	12. 4
Sugar, raw, cane:	*Short tons*	*Short tons*	*Short tons*			
Total	3, 765, 000	4, 336, 996	4, 419, 521	100. 0	100. 0	100 0
Cuba	3, 257, 632	3, 858, 186	3, 861, 283	86. 5	89. 0	87. 4
Philippine Islands	315, 426	382, 889	510, 261	8. 4	8. 8	11. 5
Other countries	191, 942	95, 921	47, 977	5. 1	2. 2	1. 1
Tea:	*Pounds*	*Pounds*	*Pounds*			
Total	105, 442, 997	92, 778, 704	99, 410, 814	100. 0	100. 0	100. 0
Japan	34, 297, 049	28, 529, 302	29, 134, 731	32. 5	30. 7	29. 3
British East Indies	23, 720, 914	24, 784, 514	17, 994, 350	22. 5	26. 7	18. 1
China	18, 538, 792	10, 321, 852	13, 712, 803	17. 6	11. 1	13. 8
United Kingdom	17, 780, 569	18, 985, 531	22, 928, 290	16. 9	20. 5	23. 1
Dutch East Indies	8, 672, 748	6, 202, 286	8, 265, 802	8. 2	6. 7	8. 3
Other countries	2, 432, 925	3, 955, 219	7, 376, 838	2 3	4. 3	7. 4
Tobacco, leaf, unmanufactured:						
Leaf, product of Philippine Islands	1, 145, 121	1, 129, 995	1, 129, 075	100. 0	100. 0	100. 0
Leaf, suitable for cigar wrappers—						
Total	6, 413, 639	5, 766, 097	6, 590, 328	100. 0	100. 0	100 0
Netherlands	6, 219, 949	5, 608, 130	6, 353, 569	97. 0	97. 3	96. 4
Other countries	193, 690	157, 967	236, 759	3. 0	2. 7	3. 6
All other leaf—						
Total	44, 821, 366	68, 235, 035	60, 561, 607	100. 0	100. 0	100. 0
Cuba	18, 265, 315	20, 737, 457	20, 975, 654	40. 8	30. 4	34. 6
Greece	12, 887, 544	27, 724, 885	13, 342, 292	28. 8	40. 6	22. 0
Italy	4, 089, 388	9, 536, 710	12, 412, 204	9. 1	14. 0	20. 5
Germany	3, 813, 752	1, 649, 266	141, 270	8. 5	2. 4	. 2
Turkey in Asia	1, 349, 916	6, 508, 377	10, 129, 895	3. 0	9. 5	16. 7
Other countries	4, 415, 451	2, 078, 310	3, 560, 292	9. 8	3. 1	6. 0

[1] Less than 0.05 per cent.

TABLE 499.—*Origin of principal agricultural products imported into the United States, 1924–1926*—Continued

Article and country of origin	Year ended June 30— 1924	1925	1926	1924	1925	1926
VEGETABLE PRODUCTS—continued						
Vegetables:						
Onions—	*Bushels*	*Bushels*	*Bushels*	*Per cent*	*Per cent*	*Per cent*
Total	1,406,420	2,074,608	2,193,508	100.0	100.0	100.0
Spain	1,097,991	1,090,360	1,341,716	78.1	52.5	61.2
Egypt	147,796	618,238	598,846	10.5	29.8	27.3
United Kingdom	51,540	70,710	36,000	3.7	3.4	1.6
Other countries	109,093	295,390	216,946	7.7	14.3	9.9
Potatoes, natural state—						
Total	564,046	477,554	5,420,125	100.0	100.0	100.0
Canada	451,806	394,053	5,104,393	80.1	82.5	94.2
Bermuda	87,320	59,980	94,703	15.5	12.6	1.7
Other countries	24,920	23,521	221,029	4.4	4.9	4.1
FOREST PRODUCTS						
India rubber, crude:	*Pounds*	*Pounds*	*Pounds*			
Total	617,101,897	801,275,043	921,964,267	100.0	100.0	100.0
British East Indies	416,837,321	503,175,109	630,752,895	67.5	62.8	68.4
Dutch East Indies	115,233,963	146,008,053	157,149,648	18.7	18.2	17.0
United Kingdom	47,513,200	101,748,803	60,705,939	7.7	12.7	6.6
Other countries	37,517,413	50,343,078	73,355,785	6.1	6.3	8.0

Division of Statistical and Historical Research. Compiled from Monthly Summary of Foreign Commerce of the United States, June issue, 1925 and 1926, and official records of the Bureau of Foreign and Domestic Commerce.

TABLE 500.—*Foreign trade of the United States in agricultural products: Comparative summary, 1909–1926*

Year ended June 30	Agricultural exports [1] Domestic Total	Domestic Percentage of all exports	Foreign	Agricultural imports [1] Total	Percentage of all imports	Excess of agricultural exports (+) or of imports (−)	Forest products Exports Domestic	Forest products Exports Foreign	Forest products Imports	Forest products Excess of exports (+) or of imports (−)
	1,000 dollars	*Per cent*	*1,000 dollars*	*1,000 dollars*	*Per cent*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
1909	903,238	55.1	9,585	638,613	48.7	+274,210	72,442	4,983	123,920	−46,495
1910	871,158	50.9	14,470	687,509	44.2	+198,119	85,030	9,802	178,872	−84,040
1911	1,030,794	51.2	14,665	680,205	44.5	+365,254	103,039	7,587	162,312	−51,686
1912	1,050,627	48.4	12,108	783,457	47.4	+279,277	108,122	6,413	172,523	−57,988
1913	1,123,652	46.3	15,029	815,301	45.0	+323,381	124,836	7,432	180,502	−48,235
1914	1,113,974	47.8	17,729	924,247	48.8	+207,456	106,979	4,518	155,261	−43,765
1915	1,475,938	54.3	34,420	910,786	54.4	+599,571	52,554	5,089	165,849	−108,207
1916	1,518,071	35.5	42,088	1,189,705	54.1	+370,454	68,155	4,364	252,851	−180,331
1917	1,968,253	31.6	37,040	1,404,972	52.8	+600,921	68,919	11,172	322,690	−242,609
1918	2,280,466	39.1	39,553	1,618,874	55.0	+701,144	87,181	6,066	335,033	−241,787
1919	3,579,918	50.6	103,530	1,768,191	57.1	+1,915,257	113,275	6,004	293,781	−174,501
1920	3,861,511	48.6	122,598	3,129,659	59.7	+854,450	190,049	11,026	508,410	−307,334
1921	2,607,641	40.8	87,019	1,941,837	53.1	+752,823	141,876	7,805	343,141	−193,460
1922	1,915,866	51.8	40,783	1,282,880	49.2	+673,769	94,115	5,120	245,474	−146,239
1923	1,799,168	46.3	43,359	1,905,245	50.4	−62,718	129,981	6,989	405,725	−268,755
1924	1,867,098	44.2	57,640	1,716,994	48.3	+207,744	162,374	6,642	374,339	−205,323
1925	2,280,381	47.7	54,492	1,818,578	47.6	+516,295	156,187	11,530	465,464	−297,747
1926 [2]	1,891,717	40.7	48,532	1,918,460	43.0	+21,789	162,741	28,074	848,519	−657,704

Division of Statistical and Historical Research. Compiled from Foreign Commerce and Navigation of the United States, 1909–1918, and Monthly Summary of Foreign Commerce of the United States, June issues, 1920–1926. All values are gold.

[1] Not including forest products.

[2] Preliminary.

MISCELLANEOUS AGRICULTURAL STATISTICS

CROP SUMMARY

TABLE 501.—*Acreage, production, and farm value, 1924–1926*

Crop and year	Acreage	Production			Farm value Dec. 1	
		Unit	Per acre	Total	Per unit	Total
					Dolls.	*Dolls.*
Corn:						
1926	99, 492 000	Bushel	26. 6	2, 645, 031, 000	0. 644	1, 703, 430, 000
1925	101, 359, 000	do	28 8	2, 916, 961, 000	. 674	1, 966, 761, 000
1924	100, 863, 000	do	22. 9	2, 309, 414, 000	. 982	2, 266, 771, 000
Winter wheat:						
1926	36, 913, 000	do	17. 0	626, 929, 000	1. 212	759, 870, 000
1925	31, 234, 000	do	12. 9	401, 734, 000	1. 479	594, 289, 000
1924	35, 656, 000	do	16. 6	592, 259, 000	1. 316	779, 548, 000
Spring wheat: [1]						
1926	19, 613, 000	do	10. 5	205, 376, 000	1. 157	237, 719, 000
1925	21, 021, 000	do	13 1	274, 695, 000	1. 324	363, 618, 000
1924	16, 870, 000	do	16. 1	272, 169, 000	1. 262	343, 538, 000
All wheat:						
1926	56, 526, 000	do	14. 7	832, 305, 000	1 199	997, 589, 000
1925	52, 255, 000	do	12 9	676, 429, 000	1. 416	957, 907, 000
1924	52, 535, 000	do	16. 5	864, 428, 000	1. 299	1, 123, 086, 000
Oats						
1926	44, 394, 000	do	28. 2	1, 253, 739, 000	. 398	499, 531, 000
1925	44, 872, 000	do	33. 2	1, 487, 550, 000	. 380	565, 506, 000
1924	42, 110, 000	do	35. 7	1, 502, 529, 000	. 477	717, 189, 000
Barley:						
1926	8, 200, 000	do	23. 3	191, 182, 000	. 574	109, 677, 000
1925	8, 088, 000	do	26. 8	216, 554, 000	. 589	127, 453, 000
1924	6, 925, 000	do	26. 2	181, 575, 000	. 741	134, 590, 000
Rye.						
1926	3, 513, 000	do	11. 4	40, 024, 000	. 835	33, 416, 000
1925	3, 974, 000	do	11 7	46, 456, 000	. 782	36, 340, 000
1924	4, 150, 000	do	15. 8	65, 466, 000	1. 065	69, 696, 000
Buckwheat:						
1926	707, 000	do	18. 3	12, 922, 000	. 883	11, 408, 000
1925	747, 000	do	18 7	13, 994, 000	. 888	12, 423, 000
1924	745, 000	do	17. 9	13, 357, 000	1. 026	13, 708, 000
Flaxseed:						
1926	2, 897, 000	do	6. 7	19, 459, 000	1 941	37, 775, 000
1925	3, 078, 000	do	7. 3	22, 424, 000	2. 265	50, 783, 000
1924	3, 469, 000	do	9. 1	31, 547, 000	2. 274	71, 728, 000
Rice.						
1926	1, 018. 000	do	40. 3	41, 006, 000	1. 097	44, 988, 000
1925	889, 000	do	37. 5	33, 309, 000	1. 538	51, 232, 000
1924	850, 000	do	38. 2	32, 498, 000	1. 385	45, 009, 000
Grain sorghums: [2]						
1926	4, 410, 000	do	22. 8	100, 710, 000	. 545	54, 873, 000
1925	4, 120, 000	do	18. 3	75, 230, 000	. 755	56, 769, 000
1924	3, 813, 000	do	21. 1	80, 443, 000	. 852	68, 501, 000
Cotton:						
1926	47, 653, 000	Bale	[3] 187.0	18, 618, 000	[3] . 109	1, 016, 346, 000
1925	46, 053, 000	do	[3] 167.2	16, 104, 000	[3] . 182	1, 464, 032, 000
1924	41, 360, 000	do	[3] 157.4	13, 628, 000	[3] . 226	1, 540, 884, 000
Cottonseed:						
1926		Ton		8, 237, 000	18. 64	154, 089, 000
1925		do		7, 150, 000	27. 27	194, 970, 000
1924		do		6, 051, 000	32. 39	195, 951, 000
Hay, tame:						
1926	58, 840, 000	do	1. 47	86, 378, 000	14. 09	1, 216, 694, 000
1925	58, 231, 000	do	1. 47	85, 717, 000	13. 94	1, 195, 133, 000
1924	61, 147, 000	do	1. 60	97, 622, 000	13 77	1, 344, 129, 000
Hay, wild:						
1926	13, 506, 000	do	. 74	9, 984, 000	10. 07	100, 513, 000
1925	14, 560, 000	do	. 87	12, 724, 000	8. 53	108, 485, 000
1924	15, 205, 000	do	. 98	14, 859, 000	7. 83	116, 301, 000
All hay:						
1926	72, 346, 000	do	1. 33	96. 362, 000	13 67	1, 317, 207, 000
1925	72, 791, 000	do	1. 35	98, 441, 000	13. 24	1, 303, 618, 000
1924	76, 352, 000	do	1. 47	112, 481, 000	12. 98	1, 460, 430, 000
Clover seed:						
1926	550, 500	Bushel	1. 4	797, 000	17. 72	14, 124, 000
1925	823, 000	do	1. 4	1, 113, 000	14. 87	16, 547, 000
1924	820, 000	do	1. 2	958, 000	14. 49	13, 882, 000

[1] Including durum. [2] Principal producing States. [3] Pounds or per pound.

TABLE 501.—*Acreage, production, and farm value, 1924–1926*—Continued

Crop and year	Acreage	Production: Unit	Production: Per acre	Production: Total	Farm value Dec. 1: Per unit	Farm value Dec. 1: Total
Beans, dry edible: [2]					*Dolls.*	*Dolls.*
1926	1,659,000	Bushel	10.3	17,138,000	2.93	50,228,000
1925	1,606,000	do	12.4	19,928,000	3.28	65,376,000
1924	1,576,000	do	9.6	15,164,000	3.74	56,744,000
Soybeans: [4]						
1926	521,000	do	12.5	6,517,000	2.02	13,180,000
1925	431,000	do	11.8	5,102,000	2.21	11,283,000
1924	490,000	do	11.6	5,680,000	2.21	12,547,000
Peanuts:						
1926	852,000	Pound	735.8	626,866,000	.045	28,214,000
1925	958,000	do	729.1	698,475,000	.036	25,390,000
1924	1,187,000	do	627.7	745,059,000	.046	34,259,000
Cowpeas: [4]						
1926	784,000	Bushel	9.5	7,484,000	2.10	15,752,000
1925	570,000	do	7.4	4,214,000	2.81	11,856,000
1924	731,000	do	7.4	5,371,000	2.37	12,732,000
Velvet beans.						
1926	1,391,000	Ton	[3] 851.2	[5] 592,000		
1925	1,627,000	do	[3] 538.4	[5] 438,000		
1924	1,733,000	do	[3] 744.4	[5] 645,000		
Potatoes:						
1926	3,151,000	Bushel	113.1	356,360,000	1.417	504,993,000
1925	3,092,000	do	104.6	323,465,000	1.868	604,072,000
1924	3,327,000	do	126.7	421,585,000	.625	263,312,000
Sweet potatoes.						
1926	830,000	do	100.8	83,658,000	.957	80,075,000
1925	779,000	do	80.0	62,319,000	1.364	85,034,000
1924	688,000	do	78.4	53,912,000	1.288	69,444,000
Tobacco.						
1926	1,664,700	Pound	795.0	1,323,388,000	.185	245,175,000
1925	1,757,300	do	783.3	1,376,628,000	.182	250,774,000
1924	1,705,800	do	733.6	1,251,343,000	.207	259,139,000
Sugar cane except for sirup (La.):						
1926	206,000	Ton	6.9	1,423,000	4.917	6,997,000
1925	236,000	do	14.0	3,290,000	4.0505	13,326,000
1924	251,000	do	7.6	1,898,000	5.575	10,582,000
Cane sirup.						
1926	127,000	Gallon	171.1	21,721,000	.877	19,043,000
1925	125,000	do	163.2	20,400,000	.967	19,719,000
1924	140,000	do	143.9	20,148,000	1.015	20,451,000
Sugar beets:						
1926	685,000	Ton	11.0	7,537,000	7.93	59,706,000
1925	647,000	do	11.4	7,366,000	6.39	47,059,000
1924	815,000	do	9.2	7,489,000	7.92	59,524,000
Sorghum sirup:						
1926	403,000	Gallon	89.3	35,977,000	.845	30,398,000
1925	370,000	do	67.4	24,926,000	.949	23,646,000
1924	369,000	do	67.8	25,004,000	.943	23,579,000
Maple sugar and sirup (as sugar):						
1926	[6] 15,245,000	Pound	[7] 2.28	31,776,000	.289	10,045,000
1925	[6] 15,313,000	do	[7] 1.83	27,948,000	.271	7,569,000
1924	[6] 15,407,000	do	[7] 2.29	35,302,000	.263	9,282,000
Broomcorn: [2]						
1926	298,000	Ton	[3] 345.6	51,500	78.49	4,042,000
1925	223,000	do	[3] 264.6	29,500	143.02	4,219,000
1924	451,000	do	[3] 346.8	78,200	95.63	7,478,000
Hops: [2]						
1926	20,800	Pound	1,415	29,428,000	.230	6,778,000
1925	20,350	do	1,404	28,573,000	.218	6,232,000
1924	20,350	do	1,360	27,670,000	.103	2,863,000
FRUIT CROPS						
Apples, total:						
1926		Bushel		246,460,000	.727	179,265,000
1925		do		172,389,000	1.257	216,755,000
1924		do		171,725,000	1.181	202,807,000
Apples, commercial:						
1926		Barrel		39,095,000	2.19	85,440,000
1925		do		33,246,000	3.67	121,968,000
1924		do		28,013,000	3.66	102,660,000
Peaches:						
1926		Bushel		68,425,000	1.002	67,076,000
1925		do		46,562,000	1.378	64,171,000
1924		do		53,848,000	1.264	68,084,000

[2] Principal producing States.
[3] Pounds or per pound.
[4] Equivalent solid acres grown for the grain, and total bushels of shelled beans and peas gathered.
[5] Total production of beans in the pod, including those grazed.
[6] Trees tapped.
[7] Per tree.

TABLE 501.—*Acreage, production, and farm value, 1924–1926*—Continued

Crop and year	Acreage	Production			Farm value Dec. 1	
		Unit	Per acre	Total	Per unit	Total
FRUIT CROPS—continued						
Pears:					*Dolls.*	*Dolls.*
1926		Bushel		25,644,000	0.887	22,742,000
1925		do		20,720,000	1.403	29,066,000
1924		do		18,866,000	1.415	26,689,000
Grapes:						
1926		Ton		2,349,117	27.58	64,781,911
1925		do		2,064,085	32.03	66,115,058
1924		do		1,777,722	41.79	74,297,480
Oranges (2 States):						
1926		Box		33,900,000	2.74	92,790,000
1925		do		33,300,000	2.82	93,753,000
Grapefruit (Fla.):						
1926		do		6,980,000	2.00	13,960,000
1925		do		7,300,000	2.00	14,600,000
Lemons (Calif.):						
1926		do		7,200,000	2.00	14,400,000
1925		do		7,136,000	2.11	15,057,000
1924		do		5,125,000	2.40	12,300,000
Cranberries: [2]						
1926	28,000	Barrel	25.7	720,000	6.75	4,862,000
1925	28,000	do	20.3	569,000	11.20	6,370,000
1924	28,000	do	20.8	582,000	9.42	5,485,000
COMMERCIAL TRUCK CROPS [8]						
Asparagus:						
1926	85,640	Crate	89	7,645,000	1.72	13,175,000
1925	66,000	do	81	6,323,000	1.73	10,208,000
1924	50,280	do	109	5,480,000	1.74	9,511,000
Beans, snap:						
1926	91,470	Ton	1.1	104,256	126.39	13,177,000
1925	98,330	do	1.4	137,930	104.00	14,348,000
1924	84,600	do	1.3	110,660	125.20	13,855,000
Cabbage:						
1926	125,760	do	7.9	997,400	17.91	17,865,000
1925	118,710	do	8.0	946,200	17.43	16,496,000
1924	118,090	do	8.9	1,056,700	16.52	17,452,000
Cantaloupes:						
1926	103,160	Crate	136	14,038,000	1.29	18,044,000
1925	93,000	do	153	14,258,000	1.47	20,915,000
1924	95,500	do	147	14,068,000	1.42	19,968,000
Carrots:						
1926	16,030	Bushel	272	4,355,000	.62	2,695,000
1925	14,610	do	285	4,158,000	.56	2,334,000
1924	11,480	do	356	4,084,000	.84	3,430,000
Cauliflower:						
1926	22,560	Crate	246	5,550,000	.74	4,119,000
1925	15,140	do	224	3,393,000	1.18	4,011,000
1924	13,000	do	211	2,741,000	1.39	3,803,000
Celery:						
1926	24,270	do	268	6,523,000	1.91	12,463,000
1925	22,830	do	293	6,685,000	1.79	11,979,000
1924	22,710	do	297	6,741,000	1.83	12,347,000
Corn, sweet (canning):						
1926	311,640	Ton	2.6	803,000	13.17	10,579,000
1925	393,910	do	2.6	1,014,100	15.04	15,253,000
1924	302,790	do	1.7	527,800	14.17	7,478,000
Cucumbers:						
1926	107,410	Bushel	82	8,801,000	1.17	10,330,000
1925	139,060	do	88	12,217,000	1.14	13,986,000
1924	121,500	do	62	7,507,000	1.42	10,675,000
Eggplant:						
1926	3,220	do	244	786,000	1.19	932,000
1925	3,490	do	259	904,000	1.04	938,000
1924	2,690	do	296	795,000	1.24	982,000
Lettuce:						
1926	106,100	Crate	162	17,236,000	1.60	27,585,000
1925	86,020	do	187	16,076,000	1.48	23,718,000
1924	68,660	do	193	13,221,000	1.50	19,813,000
Onions:						
1926	74,560	Bushel	277	20,625,000	.76	15,574,000
1925	65,050	do	299	19,423,000	1.08	21,110,000
1924	65,090	do	294	19,146,000	.86	16,376,000

[2] Principal producing States.
[8] For commercial truck crops the price is the average price for the season paid to growers.

TABLE 501.—*Acreage, production, and farm value, 1924–1926*—Continued

Crop and year	Acreage	Production			Farm value Dec. 1	
		Unit	Per acre	Total	Per unit	Total
COMMERCIAL TRUCK CROPS—con.						
Peas, green:					*Dolls.*	*Dolls.*
1926	255, 220	Ton	1.0	253, 664	70. 07	17, 773, 000
1925	260, 310	do	.9	242, 428	68. 53	16, 614, 000
1924	254, 270	do	1.1	274, 368	66. 22	18, 168, 000
Peppers:						
1926	15, 430	Bushel	251	3, 933, 000	1. 28	5, 031, 000
1925	13, 700	do	252	3, 455, 000	1. 31	4, 516, 000
1924	11, 160	do	329	3, 674, 000	1. 11	4, 064, 000
Potatoes, early: [9]						
1926	315, 580	do	109	34, 471, 000	1. 54	53, 090, 000
1925	298, 780	do	102	30, 466, 000	1. 39	42, 323, 000
1924	312, 250	do	129	40, 203, 000	. 92	37, 005, 000
Spinach:						
1926	48, 530	Ton	2. 5	119, 200	58. 2[illegible]	6, 947, 000
1925	44, 510	do	2. 4	106, 608	7[illegible]. 41	8, 039, 000
1924	34, 390	do	3. 1	108, 278	73. 94	8, 006, 000
Strawberries:						
1926	140, 300	Quart	1, 828	256, 411, 000	. 17	44, 537, 000
1925	132, 550	do	1, 595	211, 396, 000	. 18	37, 623, 000
1924	156, 250	do	1, 822	284, 716, 000	. 14	39, 919, 000
Tomatoes:						
1926	375, 950	Ton	3. 7	1, 388, 784	28. 17	40, 390, 000
1925	483, 750	do	4. 8	2, 321, 588	27. 23	63, 208, 000
1924	439, 790	do	3. 8	1, 677, 028	33. 96	56, 952, 000
Watermelons:						
1926	199, 560	Car	[10] 349	69, 551	146 00	10, 141, 000
1925	173, 710	do	[10] 325	56, 498	236. 00	13, 360, 000
1924	183, 260	do	[10] 310	56, 851	160. 00	9, 113, 000
Total:						
1926	356, 719, 390					7, 938, 845, 911
1925	354, 042, 110					8, 918, 730, 058
1924	349, 851, 910					[11] 9, 364, 600, 480

Division of Crop and Livestock Estimates.

[9] This item is included in the item "potatoes" shown in the first column of this table and appears only once in the "total."

[10] Number

[11] Approximate figures for oranges and grapefruit included.

TABLE 502.—*Index numbers of the mass of crop production*

[Average of 1910–1914=100]

Year and period	Production index		Year and period	Production index	
	Total	Per capita		Total	Per capita
1909	94	99	1920	117	104
1910	97	101	1921	100	88
1911	91	92	1922	110	96
1912	110	109	1923	110	94
1913	95	95	1924	111	94
			1925	112	94
1914	107	104	1926	114	94
1915	116	109			
1916	100	93	1905–1909	94 0	102. 8
1917	108	100	1910–1914	100. 0	100. 0
1918	107	98	1915–1919	108. 0	99. 6
1919	108	98	1920–1924	109. 6	95. 2

Division of Crop and Livestock Estimates. Production of wheat, corn, oats, barley, rye, buckwheat, potatoes, hay, tobacco, and cotton, each crop each year multiplied by constant price and divided by average aggregate of base years.

TABLE 503.—*Crops: Value of 22 crops and of all crops,*[1] *with rank*

State	Value all crops, 1919 census [1]	Ratio value 22 crops to all crops in census 1919	Value 22 crops [2]				Hypothetical value all crops [3]			Rank	
			1919 census	1924	1925	1926	1924	1925	1926	1926	
										22 crops	All crops
	1,000 dolls.	*Per cent*	*1,000 dolls.*	*1,000 dolls.*	*1,000 dolls.*	*1,000 dolls.*	*1,000 dolls.*	*1,000 dolls.*	*1,000 dolls*		
Me	100,152	92	91,982	45,411	84,058	74,739	49,360	102,237	81,238	32	33
N. H	23,510	79	18,479	14,250	16,900	15,504	18,038	21,468	19,625	45	45
Vt	48,000	77	36,835	33,815	32,515	32,760	43,916	42,227	42,545	38	39
Mass	53,701	68	36,601	29,884	33,271	30,438	43,947	48,928	44,762	40	38
R. I	5,340	69	3,680	2,678	3,141	3,243	3,881	4,552	4,700	48	48
Conn	44,473	81	36,006	31,265	29,636	31,148	38,599	36,588	38,454	39	40
N. Y	417,047	77	321,598	228,566	253,944	219,847	296,839	329,797	285,516	14	11
N. J	87,484	70	61,273	36,051	42,096	37,184	51,501	60,137	53,120	37	37
Pa	409,969	86	350,991	232,664	257,870	223,459	270,540	299,849	259,836	13	13
Ohio	607,038	87	526,943	273,875	271,039	260,939	314,799	311,539	299,930	8	10
Ind	497,230	90	449,079	240,726	224,265	202,519	267,473	249,183	225,021	16	16
Ill	864,738	92	797,893	510,568	426,812	358,760	554,965	463,926	389,957	3	4
Mich	404,015	82	329,651	210,518	221,065	205,493	256,729	269,591	250,601	15	15
Wis	445,348	81	360,404	236,110	272,921	243,659	291,494	336,940	300,814	11	9
Minn	506,020	89	450,327	373,612	331,135	291,037	419,789	372,062	327,008	5	7
Iowa	890,391	92	820,126	490,694	444,239	394,353	533,363	482,869	428,645	2	2
Mo	559,048	89	496,261	293,924	278,604	246,020	330,252	313,038	276,427	9	12
N. Dak	301,783	92	278,315	329,578	259,106	175,438	358,237	281,637	190,693	17	20
S. Dak	311,007	93	288,376	228,414	174,230	110,190	245,606	187,344	118,484	27	28
Nebr	519,730	95	491,338	349,288	300,670	244,470	367,672	316,495	257,337	10	14
Kans	588,923	91	526,408	415,120	285,198	300,193	456,176	313,404	329,882	4	5
Del	23,059	72	16,516	11,822	12,604	10,456	16,419	17,506	14,522	46	46
Md	110,166	80	88,066	56,272	60,092	56,858	70,340	75,115	71,072	35	35
Va	292,824	85	247,463	151,596	140,066	146,289	178,348	164,784	172,105	22	24
W. Va	96,537	81	78,142	54,497	61,350	60,490	67,280	75,741	74,679	34	34
N. C	503,229	87	438,892	278,282	294,931	285,082	319,864	339,001	327,680	6	6
S. C	437,122	82	360,025	143,215	135,934	117,056	174,652	165,773	142,751	26	26
Ga	540,614	80	430,270	206,106	185,625	169,279	257,632	232,031	211,599	18	17
Fla	80,257	62	49,521	37,898	52,232	43,996	61,126	84,215	70,961	36	36
Ky	347,339	89	310,224	195,338	175,286	160,513	219,481	196,951	180,352	19	21
Tenn	318,285	83	263,797	182,691	162,014	145,760	220,110	195,193	175,614	23	22
Ala	304,349	81	246,271	182,205	188,521	141,571	224,944	232,742	174,779	24	23
Miss	336,207	83	278,539	178,192	244,250	159,989	214,689	294,277	192,758	20	18
Ark	340,813	83	283,175	195,789	191,506	158,765	235,890	230,730	191,283	21	19
La	206,182	71	147,290	104,510	140,989	95,574	147,197	198,576	134,611	29	27
Okla	550,085	87	479,314	351,843	251,241	268,424	404,417	288,783	308,533	7	8
Tex	1,071,542	83	885,955	751,815	494,354	524,215	905,801	595,607	631,584	1	1
Mont	69,975	86	60,058	117,431	101,416	98,801	136,548	117,926	114,885	28	29
Idaho	126,495	88	111,940	73,009	103,687	82,611	82,965	117,826	93,876	31	31
Wyo	30,271	88	26,528	23,651	27,630	26,791	26,876	31,398	30,444	41	43
Colo	181,065	76	137,660	92,098	112,033	82,717	121,182	147,412	108,838	30	30
N. Mex	40,620	77	31,093	30,769	22,003	26,025	39,960	28,575	33,799	42	42
Ariz	42,481	84	35,478	28,138	27,578	21,716	33,498	32,831	25,852	44	44
Utah	58,067	70	40,901	22,267	33,040	25,766	31,810	47,200	36,809	43	41
Nev	13,980	96	13,439	7,971	10,204	8,685	8,303	10,629	9,047	47	47
Wash	227,212	82	185,667	107,071	147,601	120,720	130,587	180,001	147,220	25	25
Oreg	131,885	75	99,095	59,417	76,779	67,350	79,223	102,372	89,800	33	32
Calif	589,757	54	315,091	227,360	261,605	229,894	421,037	484,454	425,730	12	3
U. S	14,755,365	84.3	12,442,977	8,478,264	7,967,346	7,036,786	10,043,355	9,531,495	8,415,778	------	------

Division of Crop and Livestock Estimates.

[1] Does not include nursery or greenhouse products or forest products of the farm.
[2] The crops included are corn, wheat, oats, barley, rye, buckwheat, flaxseed, rice, potatoes, sweet potatoes, all hay, tobacco, lint cotton, beans, broomcorn, grain sorghums, hops, oranges, clover seed, peanuts, cranberries, and apples.
[3] Based upon the relation of the value of all crops to that of the 22 crops shown by the census in 1919.

TABLE 504.—*Crops: Value per acre of 10 crops combined, 1866–1926*

Year	Value per acre	Year	Value per acre	Year	Value per acre	Year	Value per acre
	Dollars		*Dollars*		*Dollars*		*Dollars*
1866	14. 17	1882	12. 93	1897	9. 07	1912	16. 09
1867	15. 09	1883	10. 93	1898	9. 00	1913	16. 49
1868	14. 17	1884	9 95	1899	9. 13	1914	16. 44
1869	14. 67	1885	9. 72	1900	10. 31	1915	17. 18
1870	15. 40	1886	9. 41	1901	11. 43	1916	22. 58
1871	15. 74	1887	10. 14	1902	12 07	1917	33. 27
1872	14. 86	1888	10. 30	1903	12 62	1918	33. 73
1873	14. 19	1889	8 99	1904	13. 26	1919	35. 74
1874	13. 25	1890	11. 03	1905	13 28	1920	23. 26
1875	12. 20	1891	11. 76	1906	13. 46	1921	14. 45
1876	10. 80	1892	10. 10	1907	14 74	1922	19. 23
1877	12. 00	1893	9. 50	1908	15. 32	1923	21. 52
1878	10. 37	1894	9. 06	1909	16. 00	1924	23 88
1879	13. 26	1895	8. 12	1910	15. 53	1925	22. 17
1880	13. 01	1896	7. 94	1911	15. 36	1926	19. 07
1881	13. 10						

Division of Crop and Livestock Estimates. Corn, wheat, oats, barley, rye, buckwheat, potatoes, all hay tobacco, and cotton, which comprise nearly 90 per cent of the area in all field crops, the average value of which closely approximates the value per acre of the aggregate of all crops.

TABLE 505.—*Acreage of principal crops, by States, 1924–1926*

[Aggregate acreage of corn, wheat, oats, barley, rye, buckwheat, potatoes, sweet potatoes, tobacco, flax, rice, all hay, cotton, peanuts, grain sorghums, beans, broomcorn, hops, and cranberries]

State	Acreage of crops named above			Per cent of total acreage in specified crops [1]	State	Acreage of crops named above			Per cent of total acreage in specified crops [1]
	1924	1925	1926			1924	1925	1926	
	1,000 acres	*1,000 acres*	*1,000 acres*	*Per cent*		*1,000 acres*	*1,000 acres*	*1,000 acres*	*Per cent*
Maine	1, 592	1, 592	1, 591	96	North Carolina	6, 668	6, 821	7, 027	94
New Hampshire	523	523	523	94	South Carolina	5, 011	5, 076	5, 072	92
Vermont	1, 111	1, 141	1, 141	93	Georgia	8, 737	9, 069	9, 413	94
Massachusetts	573	573	575	86	Florida	890	876	833	89
Rhode Island	61	61	62	84	Kentucky	5, 227	5, 354	5, 325	95
Connecticut	480	481	479	88	Tennessee	6, 261	6, 388	6, 599	91
New York	7, 868	7, 841	7, 638	91	Alabama	7, 091	7, 287	7, 520	93
New Jersey	720	708	686	86	Mississippi	5, 777	6, 046	6 302	96
Pennsylvania	7, 186	7, 311	7, 142	97	Arkansas	6, 473	6, 994	7, 074	93
Ohio	10, 541	10, 751	10, 649	97	Louisiana	3, 711	3, 943	4, 018	91
Indiana	10, 694	10, 878	10, 915	96	Oklahoma	14, 207	14, 518	15, 503	93
Illinois	19, 721	20, 196	20, 014	97	Texas	26, 803	25, 599	29, 497	92
Michigan	8, 344	8, 322	8, 237	93	Montana	6, 501	6, 688	7, 006	87
Wisconsin	9, 452	9, 534	9. 502	90	Idaho	2, 472	2, 579	2, 616	91
Minnesota	17, 899	17, 923	17, 940	96	Wyoming	1, 562	1, 638	1, 686	90
Iowa	21, 177	21, 503	21, 605	97	Colorado	5, 526	5, 412	5, 803	85
Missouri	13, 970	14, 505	13, 851	96	New Mexico	1, 166	841	1, 211	78
North Dakota	20, 192	20, 452	19, 344	96	Arizona	475	470	514	85
South Dakota	15, 762	15, 918	13, 415	98	Utah	911	992	987	88
Nebraska	19, 649	19, 674	19, 872	97	Nevada	361	421	402	98
Kansas	21, 560	21, 238	21, 309	93	Washington	3, 198	3, 486	3, 491	86
Delaware	341	344	346	89	Oregon	2, 428	2, 674	2, 702	80
Maryland	1, 618	1, 637	1, 643	91	California	3, 986	4, 467	4, 585	75
Virginia	4, 036	4, 208	4, 249	93					
West Virginia	1, 633	1, 794	1, 745	95	United States	342, 155	346, 690	349, 659	93. 8

Division of Crop and Livestock Estimates.

[1] Based on census proportions in 1919.

TABLE 506.—*Returns from farming, 1925, with comparisons*

	North Atlantic		East North Central		West North Central		South Atlantic		South Central		Western		United States			
	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1922	1923	1924	1925
Number of reports	1,761	1,789	2,808	3,067	3,398	3,402	1,990	1,913	3,412	3,434	1,734	1,725	6,094	16,183	15,103	15,330
Size of farm—acres	144	144	155	153	355	354	219	206	342	374	616	606	252	298	303	304
Value of farm real estate, Jan. 1	$9,300	$9,115	$15,027	$14,260	$20,760	$21,137	$10,189	$9,543	$10,537	$10,324	$17,861	$18,184	$13,586	$14,530	$14,323	$14,157
Value of farm personalty, Jan. 1	3,142	3,056	2,754	2,773	3,872	4,041	1,781	1,655	2,016	2,044	4,329	4,376	2,844	2,960	2,937	2,965
Receipts:																
Crop sales	893	989	638	653	928	823	1,006	933	1,238	1,049	1,468	1,890	816	850	1,042	993
Sales of livestock	360	382	838	983	1,497	1,767	341	352	384	436	988	1,089	660	760	780	897
Sales of livestock products	1,474	1,375	728	770	462	509	287	300	208	211	643	646	454	550	570	585
Miscellaneous other	129	138	71	79	74	75	55	57	46	44	80	93	42	80	72	76
Total	2,856	2,884	2,275	2,485	2,961	3,174	1,689	1,642	1,876	1,740	3,179	3,718	1,972	2,240	2,434	2,551
Cash outlay:																
Hired labor	555	477	283	279	336	347	349	327	312	308	651	775	331	350	384	386
Livestock bought	164	166	206	251	387	419	142	131	122	127	270	311	204	240	222	242
Feed bought	559	482	237	239	277	305	124	121	131	134	266	240	175	210	248	244
Fertilizer	134	145	44	54	6	7	202	207	52	53	14	19	57	60	66	69
Seed	60	61	47	49	44	48	38	34	37	36	44	63	43	40	44	47
Taxes on farm property	167	164	230	223	239	246	122	119	138	122	254	271	174	190	192	191
Machinery and tools	129	139	101	116	126	165	69	59	80	70	119	180	123	110	103	119
Miscellaneous other	181	195	144	169	165	195	91	88	86	111	303	390	150	150	151	179
Total	1,949	1,829	1,292	1,380	1,580	1,732	1,137	1,086	958	961	1,921	2,249	1,257	1,350	1,410	1,477
Receipts less cash outlay	907	1,055	983	1,105	1,381	1,442	552	556	918	779	1,258	1,469	715	890	1,024	1,074
Increase in inventory of personal property	115	297	172	265	273	238	104	60	141	45	248	578	202	130	181	223
Net result	1,022	1,352	1,155	1,370	1,654	1,680	656	616	1,059	824	1,506	2,047	917	1,020	1,205	1,297
Interest paid	97	95	185	198	387	387	110	99	177	156	371	362	(1)	230	230	225
Spent for farm improvements	135	135	127	116	139	160	124	103	133	104	132	177	(1)	140	133	131

NONCASH (ESTIMATED) ITEMS

Value of food produced and used on the farm [2]	294	265	266	274	239	284	267	281	265	278	303	306	266	253	247	249
Value of family labor, including owner [2]	716	870	789	793	912	943	822	868	1,091	948	500	501	516	534	969	994
Change in value of real estate during year (−shows decrease)	−52	−66	+145	+173	+105	+133	+113	+72	+200	+133	+138	+448	+168	+103	+90	+304

Division of Farm Management and Costs. Computed from reports of individual farms operated by their owners. Tables for 1922 in Agriculture Yearbook, 1924, pp. 1131–1132. Tables for 1923 in Agriculture Yearbook, 1925, pp. 1342–1343.

[1] Not reported for 1922.

[2] Averages of farms for which the item was reported.

TABLE 507.—*Returns from farming: Returns to labor and capital, 1924 and 1925*

	North Atlantic		East North Central		West North Central		South Atlantic		South Central		Western		United States	
	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Net results as given	1,022	1,352	1,155	1,370	1,654	1,680	656	616	1,059	824	1,506	2,047	1,205	1,297
Add food, value used [1]	239	284	267	281	265	278	303	306	266	253	247	249	266	274
Total	1,261	1,636	1,422	1,651	1,919	1,958	959	922	1,325	1,077	1,753	2,296	1,471	1,571
Less unpaid labor [2]	912	943	822	868	1,091	948	500	501	516	534	969	994	789	793
Return to capital	349	693	600	783	828	1,010	459	421	809	543	784	1,302	682	778
Return to capital, per cent [3]	2.8	5.7	3.4	4.6	3.4	4.0	3.8	3.8	6.4	4.4	3.5	5.8	4.0	4.5
Interest, assuming rate of 6 per cent [4]	747	730	1,067	1,022	1,478	1,518	718	672	753	742	1,331	1,354	1,036	1,029
Return to all unpaid labor	514	906	355	629	441	440	241	250	572	335	422	942	435	542
Return to operator (prorated) [5]	448	766	279	464	247	297	216	220	473	272	372	827	313	392
Return to operator (family labor at hired labor rates) [6]	396	146	178	228	−39	308	182	62	483	100	308	121	215	219

Division of Farm Management and Costs. Computed from reports of owner operators (15,103 in 1924 and 15,330 in 1925, and other information. In computing this table certain arbitrary assumptions are explicitly or implicitly made. For 1922 see Agriculture Yearbook, 1924, p. 1132. For 1923 see Agriculture Yearbook, 1925, p. 1343.

[1] Averages of estimates made by 13,753 farms for 1924; by 13,948 for 1925.

[2] Averages of estimates made by 12,133 farms for 1924; by 12,811 for 1925.

[3] Based on the reported value of farm property Jan. 1.

[4] Many recall paying more than 6 per cent.

[5] Assumes that all unpaid family labor shared the reduced amount according to the amount of its claim established: (1) For the operator, as 12 times the monthly wages of hired help without board, and (2) for the rest of the family, the difference between operator's labor so figured and the reported value of unpaid labor.

[6] The assumption is that the operator bears all the burden of failure to earn common hired-labor wages and attributes such wages to his family before computing his remainder or wages.

TABLE 508.—*Value per acre of various crops, based on December 1 price, 1926*

State	Wheat	Rye	Corn	Oats	Barley	Flaxseed	Buckwheat	Rice	Potatoes	Cotton	Hay, tame	Sweet potatoes	Tobacco
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Maine	35.00	------	42.00	23.94	27.60	------	19.09	------	385.70	------	14.78	------	------
New Hampshire	------	------	47.00	26.00	------	------	------	------	280.50	------	21.66	------	------
Vermont	26.50	------	44.65	22.80	25.50	------	19.55	------	217.00	------	22.91	------	------
Massachusetts	------	------	55.20	23.80	------	------	------	------	279.00	------	29.88	------	506.80
Rhode Island	------	------	55.20	22.40	------	------	------	------	270.00	------	32.25	------	------
Connecticut	------	------	57.50	21.12	------	------	------	------	279.00	------	30.07	------	495.80
New York	23.10	15.50	30.10	17.00	21.22	------	16.82	------	187.20	------	19.80	------	209.00
New Jersey	29.03	18.05	36.80	16.50	28.05	------	18.00	------	224.75	------	31.67	174.00	------
Pennsylvania	25.80	15.52	31.98	15.68	20.00	------	16.91	------	190.40	------	24.05	143.00	138.60
Ohio	28.57	15.40	24.30	14.82	19.84	------	16.62	------	159.80	------	19.04	157.50	102.82
Indiana	24.79	12.32	18.25	10.50	16.50	------	15.20	------	132.00	------	17.64	159.50	89.30
Illinois	21.93	12.90	19.04	9.28	17.98	------	11.96	------	140.00	------	18.24	148.50	------
Michigan	22.32	10.53	24.82	13.20	18.52	------	12.24	------	144.00	------	19.73	------	------
Wisconsin	25.48	12.60	25.88	15.00	22.42	24.00	13.05	------	141.60	------	25.50	------	147.20
Minnesota	15.86	10.26	19.04	9.69	12.75	18.52	12.75	------	115.00	------	18.60	------	------
Iowa	25.08	14.35	20.72	11.02	17.08	22.62	14.76	------	134.30	------	18.91	206.00	------
Missouri	18.98	14.58	18.50	8.40	19.20	15.60	12.75	67.10	136.00	26.13	15.26	145.60	190.00
North Dakota	9.36	5.55	12.24	5.61	6.58	10.23	12.00	------	96.00	------	11.33	------	------
South Dakota	6.66	4.53	10.44	4.21	5.25	11.02	11.20	------	95.40	------	13.00	------	------
Nebraska	15.19	7.83	10.54	8.28	12.01	16.09	9.90	------	116.80	------	26.04	------	------
Kansas	17.60	11.00	7.21	9.50	6.95	13.80	------	------	154.70	------	22.49	174.15	------
Delaware	26.00	16.50	19.84	16.52	------	------	14.40	------	120.40	------	27.20	90.35	------
Maryland	29.90	18.90	25.47	16.40	27.44	------	20.20	------	144.00	------	26.00	123.75	194.40
Virginia	21.62	15.12	23.38	16.38	27.90	------	20.90	------	134.85	31.04	19.70	125.00	135.17
West Virginia	21.60	14.30	31.02	16.52	------	------	19.00	------	177.02	------	25.61	176.00	161.50
North Carolina	20.16	16.25	19.36	15.18	26.00	------	22.00	------	160.00	35.53	18.20	90.00	180.84
South Carolina	24.80	24.50	13.95	16.88	------	------	------	20.40	188.70	22.06	15.60	80.00	165.43
Georgia	22.50	19.20	11.02	15.87	------	------	------	22.00	119.70	20.32	13.68	68.80	184.80
Florida	------	------	12.88	10.86	------	------	------	------	295.00	15.44	16.06	125.00	320.28
Kentucky	24.60	16.74	21.45	12.98	28.38	------	14.28	------	151.68	------	22.04	129.60	100.32
Tennessee	24.48	16.80	18.15	13.75	28.80	------	22.00	------	122.46	20.16	20.92	86.10	73.41
Alabama	21.43	------	12.31	14.96	------	------	------	------	140.00	21.47	17.10	85.00	------
Mississippi	22.17	------	15.74	14.52	------	------	------	21.60	127.80	29.71	18.72	98.80	------
Arkansas	17.27	13.75	16.40	11.44	------	------	------	53.00	111.00	23.56	18.43	102.60	------
Louisiana	------	------	15.75	17.02	------	------	------	34.12	103.70	23.01	16.82	81.00	180.00
Oklahoma	20.65	13.95	14.56	10.36	15.66	------	------	------	112.20	19.25	18.48	105.00	------
Texas	21.84	18.43	16.38	16.19	18.55	------	------	40.70	129.50	17.35	16.68	88.35	------
Montana	13.93	9.00	10.12	13.78	15.36	8.70	------	------	102.00	------	16.70	------	------
Idaho	24.99	11.32	36.90	18.00	22.20	------	------	------	186.90	------	24.30	------	------
Wyoming	20.08	9.38	14.40	15.75	20.46	------	------	------	140.00	------	16.49	------	------
Colorado	13.51	8.16	4.97	10.56	8.80	------	------	------	182.00	------	19.87	------	------
New Mexico	25.07	15.30	17.40	15.68	16.90	------	------	------	145.25	36.90	28.68	135.00	------
Arizona	32.50	------	33.60	26.25	29.75	------	------	------	110.00	45.80	47.32	232.50	------
Utah	24.35	7.20	27.60	24.00	28.80	------	------	------	152.25	------	24.48	------	------
Nevada	27.76	------	28.80	19.84	34.00	------	------	------	182.00	------	26.14	------	------
Washington	22.18	12.00	33.25	22.79	22.10	------	------	------	152.00	------	30.55	------	------
Oregon	22.91	12.48	33.00	14.50	18.85	------	------	------	100.00	------	21.23	------	------
California	23.92	------	34.56	15.60	17.40	------	------	70.22	212.52	56.00	36.04	106.70	------
United States	17.65	9.51	17.12	11.25	13.38	13.04	16.14	44.19	160.26	21.33	20.68	96.48	147.27

Division of Crop and Livestock Estimates.

TABLE 509.—*Wheat: Cost of production, by States, 1925*

State	Number of reports	Average acreage in wheat per farm	Average yield per acre	Gross cost per acre: Prepare and plant	Gross cost per acre: Harvest and thresh	Gross cost per acre: Market	Gross cost per acre: Miscellaneous labor [1]	Gross cost per acre: Commercial fertilizer	Gross cost per acre: Manure	Gross cost per acre: Seed	Gross cost per acre: Land rent	Gross cost per acre: Miscellaneous costs [2]	Gross cost per acre: Total	Credit per acre (straw)	Net cost: Per acre	Net cost: Per bushel
		Acres	Bush.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls
New York	101	11	21	7.48	6.94	1.76	0.11	3.13	3.96	3.48	7.22	3.39	37.47	4.72	32.75	1.36
New Jersey	28	12	25	5.20	7.54	1.89	.29	3.66	2.25	3.35	6.80	4.10	35.08	7.29	27.79	1.11
Pennsylvania	176	16	22	6.62	6.41	1.79	.17	3.23	4.35	2.97	6.52	3.62	35.68	5.87	29.81	1.36
Maryland	64	30	23	5.20	5.63	1.45	.11	4.09	1.97	2.78	7.31	3.21	31.75	3.84	27.91	1.21
Virginia	145	20	17	5.49	5.10	1.50	.17	3.32	2.34	2.55	6.35	2.64	29.46	3.20	26.26	1.54
West Virginia	49	15	18	5.57	4.96	1.80	.14	2.66	1.50	2.82	6.93	2.46	28.84	2.94	25.90	1.44
North Carolina	54	14	13	5.39	4.45	1.51	.30	2.81	2.11	2.15	5.60	2.25	26.57	2.01	24.56	1.89
South Carolina	29	9	12	3.08	4.76	1.36	.30	2.97	1.38	2.09	4.64	2.81	23.39	1.56	21.83	1.82
Georgia	52	8	13	3.25	4.62	1.50	.52	3.29	.78	1.93	4.73	2.39	23.01	1.60	21.41	1.65
Ohio	349	17	18	5.03	4.71	1.16	.14	2.58	1.28	2.99	6.26	2.89	27.04	2.41	24.63	1.37
Indiana	286	25	16	3.90	3.97	.93	.16	2.11	1.08	2.52	6.41	2.15	23.23	1.69	21.54	1.35
Illinois	201	39	18	3.76	4.15	1.04	.23	.59	1.07	2.13	6.45	2.19	21.61	.77	20.84	1.16
Michigan	163	13	21	5.81	4.96	1.44	.24	1.84	2.94	2.81	5.88	3.00	28.92	2.64	26.28	1.25
Wisconsin	85	5	21	4.65	5.11	2.14	.48	.03	1.66	2.77	6.37	3.33	26.54	2.70	23.84	1.14
Minnesota	234	39	16	3.58	4.06	1.10	.15	.04	.68	2.33	4.91	2.37	19.22	.61	18.61	1.16
Iowa	97	20	19	3.22	4.40	1.28	.26	.02	1.30	2.25	8.23	2.49	23.45	.90	22.55	1.19
Missouri	182	38	15	3.81	4.14	1.19	.23	1.14	.78	1.92	5.33	1.97	20.51	1.15	19.36	1.29
North Dakota	182	153	14	3.53	3.69	.90	.14	.02	.35	1.79	2.80	2.05	15.27	.22	15.05	1.08
South Dakota	89	73	13	2.61	3.57	1.01	.10		.54	1.94	3.19	2.28	15.74	.50	14.74	1.13
Nebraska	132	63	14	3.07	3.78	.75	.23	.02	.43	1.68	4.92	2.26	17.14	.47	16.67	1.19
Kansas	410	138	11	3.37	3.59	.74	.09	.04	.29	1.68	4.13	1.73	15.66	.29	15.37	1.40
Kentucky	62	20	15	3.36	4.58	1.51	.37	1.92	.65	1.99	6.02	2.77	23.17	1.70	21.47	1.43
Tennessee	52	20	14	3.73	3.98	1.26	.23	1.73	.50	1.91	6.69	2.45	22.48	1.39	21.09	1.51
Alabama	11	7	11	3.43	3.89	1.30	.64	2.30	1.05	1.78	3.69	1.68	19.76	1.23	18.53	1.68
Texas	21	82	8	2.36	2.90	.72	.30			1.30	5.96	1.37	13.11	.67	12.44	1.56
Oklahoma	84	109	10	3.13	3.75	.63	.12	.04	.15	1.46	3.37	1.64	14.29	.39	13.90	1.39
Arkansas	11	21	12	3.52	4.61	1.33	.54	.97	.37	1.79	4.14	2.54	19.81	1.44	18.37	1.53
Montana	88	155	14	4.37	3.52	1.17	.55		.21	1.48	3.48	1.82	16.60	.44	16.16	1.15
Wyoming	22	28	23	4.76	5.12	2.95	1.97		.68	1.77	2.68	2.74	22.67	2.56	20.11	.87
Colorado	54	149	18	3.84	4.42	1.64	1.45	.04	.47	1.60	6.12	3.40	22.98	.79	22.19	1.23
Utah	40	37	33	5.92	8.07	2.28	3.52		2.38	2.25	15.77	8.14	43.33	2.15	41.18	1.25
Idaho	31	96	32	4.78	6.05	1.56	2.93		.59	2.47	11.11	3.45	33.04	.90	32.14	1.00
Washington	90	207	24	4.90	5.69	1.19	.68	.04	.49	2.16	11.74	3.45	30.34	.89	29.45	1.23
Oregon	34	213	21	4.40	4.51	1.07	.54	.15	.40	.33	11.19	3.43	28.02	1.56	26.46	1.26
California	29	208	21	3.99	3.74	1.26	1.09		.59	2.27	10.07	2.92	25.93	1.56	24.37	1.16
Total [3]	3,759	61	17	4.31	4.52	1.19	.32	1.27	1.23	2.28	6.49	2.51	24.12	1.71	22.41	1.32

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters. Figures for 1923 and 1924, see Agriculture Yearbooks, 1924, p. 1134, and 1925, p. 1326.

[1] Includes miscellaneous labor, irrigating and water, seed treatment, and material.
[2] Sacks and twine, crop insurance, use of implements, use of storage buildings, and overhead.
[3] The total includes 22 reports from the following States in which there were not enough reports to show State averages: Maine, Vermont, Delaware, New Mexico, and Nevada.

TABLE 510.—*Wheat: Cost of production, by yield groups, 1925*

Yield group (bushels per acre)	Number of reports	Average acreage in wheat per farm	Average yield per acre	Gross cost per acre									Credit per acre (straw)	Net cost	
				Prepare and plant	Harvest and thresh	Market	Miscellaneous labor [1]	Fertilizer and manure	Seed	Land rent	Miscellaneous costs [2]	Total		Per acre	Per bushel
		Acres	*Bus.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
Winter-wheat belt: [3]															
3 and under	48	117	1	2.90	0.74	0.16	0.08	0.16	1.55	2.55	1.24	9.69	0.17	9.52	9.52
4 to 6	73	164	5	3.07	2.76	.39	.14	.31	1.55	3.48	1.64	13.34	.44	12.90	2.58
7 to 9	120	138	8	3.14	3.18	.56	.11	.53	1.62	4.06	1.65	14.85	.41	14.44	1.80
10 to 12	215	109	11	3.17	3.50	.69	.20	.59	1.65	4.05	1.82	15.67	.44	15.23	1.38
13 to 15	148	82	14	3.60	4.18	.95	.13	.69	1.80	4.33	2.04	17.72	.59	17.13	1.22
16 to 18	68	64	17	3.80	5.18	.95	.05	1.08	1.89	5.14	1.94	20.01	.88	19.13	1.13
19 to 21	80	58	20	3.80	4.73	1.30	.22	1.30	1.82	5.81	1.99	20.97	.58	20.39	1.02
22 to 24	22	53	22	3.88	5.00	1.26	.08	1.21	1.71	5.38	1.58	20.10	.15	19.95	.91
25 to 27	18	32	25	4.35	5.47	2.10	.30	.95	1.68	7.25	2.73	24.83	.83	24.00	.96
28 and over	16	34	32	4.11	6.80	1.19	.03	1.14	2.32	6.80	2.65	25.04	1.05	23.99	.75
Spring-wheat belt: [4]															
6 and under	13	99	5	2.87	3.03	.70	.03	1.31	1.79	2.24	2.04	14.01	.14	13.87	2.77
7 to 9	53	171	8	3.30	3.06	.66	.09	.32	1.80	2.78	1.84	13.85	.42	13.43	1.68
10 to 12	122	124	11	3.28	3.29	.83	.11	.52	1.92	3.13	2.00	15.08	.29	14.79	1.34
13 to 15	102	110	14	3.57	3.84	.97	.19	.33	2.00	3.54	1.97	16.41	.19	16.22	1.16
16 to 18	64	96	17	3.46	4.20	1.00	.28	.40	1.90	3.55	2.25	17.04	.23	16.81	.99
19 to 21	37	86	20	3.38	4.40	.90	.26	.62	1.92	3.94	2.73	18.15	.45	17.70	.88
22 and over	16	105	26	3.58	4.71	1.33	.02	1.03	1.91	5.76	2.26	20.60	.34	20.26	.78

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters. Figures for 1923 and 1924, see Agriculture Yearbooks 1924, p. 1133, and 1925, p. 1328.

[1] Includes miscellaneous labor, irrigating and water, seed treatment, and material.
[2] Includes sacks and twine, crop insurance, use of implements, use of storage buildings, and overhead.
[3] Winter-wheat belt as used here includes Kansas, Nebraska, Missouri, and Oklahoma.
[4] Spring-wheat belt as used here includes western Minnesota, North Dakota, eastern South Dakota, and eastern Montana.

TABLE 511.—*Wheat: Comparative production costs and yields, by States, 1923, 1924, and 1925*

State	Averages for farms reporting									Average yields per acre [1]			
	Net cost per bushel			Net cost per acre			Yield per acre						
	1923	1924	1925	1923	1924	1925	1923	1924	1925	1923	1924	1925	Average, 1921–1925
	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Dolls.	Bus.	Bus.	Bus.	Bus.	Bus.	Bus.	Bus.
New York	1.21	1.27	1.36	30.26	27.93	32.75	25	23	24	20	18	20	19
New Jersey	1.22	1.43	1.11	29.22	31.52	27.79	24	22	25	20	18	21	20
Pennsylvania	1.24	1.41	1.36	27.26	28.23	29.81	22	20	22	19	16	20	18
Maryland	1.26	1.42	1.21	25.53	26.93	27.91	20	19	23	19	16	21	17
Virginia	1.50	1.62	1.54	22.46	24.23	26.26	15	15	17	13	13	14	18
West Virginia	1.57	1.58	1.44	23.60	25.28	25.90	15	16	18	13	13	14	13
North Carolina	1.79	1.82	1.89	23.32	23.65	24.56	13	13	13	11	12	11	10
South Carolina	1.67	1.74	1.82	21.68	20.91	21.83	13	12	12	11	12	11	10
Georgia	1.92	1.71	1.65	19.22	18.76	21.41	10	11	13	9	10	10	10
Ohio	1.13	1.18	1.37	23.74	24.74	24.63	21	21	18	18	17	15	16
Indiana	1.10	1.16	1.35	21.96	22.03	21.54	20	19	16	16	17	14	15
Illinois	.96	1.13	1.16	19.16	20.30	20.84	20	18	18	18	15	16	17
Michigan	1.18	1.01	1.25	23.66	26.22	26.28	20	26	21	17	22	17	18
Wisconsin	1.23	1.00	1.14	20.86	23.07	23.84	17	23	21	17	22	20	18
Minnesota	1.19	.88	1.16	17.85	19.43	18.61	15	22	16	13	22	13	14
Iowa	1.03	.95	1.19	19.65	20.97	22.55	19	22	19	18	20	17	19
Missouri	1.24	1.30	1.29	18.66	19.43	19.36	15	15	15	13	13	13	13
North Dakota	1.41	.90	1.08	12.66	14.37	15.05	9	16	14	7	16	12	12
South Dakota	1.13	.96	1.13	13.57	14.45	14.74	12	15	13	10	15	12	12
Nebraska	1.27	.90	1.19	16.55	18.96	16.67	13	21	14	10	19	13	14
Kansas	1.21	.99	1.40	15.69	16.79	15.37	13	17	11	10	16	9	12
Kentucky	1.37	1.65	1.50	20.57	19.77	22.56	15	12	15	12	10	14	12
Tennessee	1.48	1.56	1.51	19.26	20.28	21.09	13	13	14	10	10	12	10
Alabama			1.68			18.53			11			11	10
Texas	1.28	.88	1.56	15.35	16.70	12.44	12	19	8	10	18	8	11
Oklahoma	1.13	.92	1.39	13.53	15.58	13.90	12	17	10	11	16	8	11
Arkansas	1.61	1.09	1.65	19.31	14.11	19.83	12	13	12	11	12	13	12
Montana	1.09	1.05	1.15	17.48	16.73	16.16	16	16	14	15	16	11	14
Wyoming	.98	1.04	.87	17.59	17.73	20.11	18	17	23	16	15	18	16
Colorado	1.07	1.01	1.23	22.57	21.31	22.19	21	21	18	13	14	18	13
New Mexico	.97	1.28		16.45	20.53		17	16		12	16		11
Utah	1.19	1.52	1.25	38.10	42.48	41.18	32	28	33	24	17	26	22
Idaho	1.04	1.24	1.00	29.12	28.46	32.14	28	23	32	29	19	28	24
Washington	.97	1.38	1.23	27.06	26.17	29.45	28	19	24	25	12	18	19
Oregon	1.12	1.26	1.26	26.94	26.54	26.46	24	21	21	24	14	21	20
California	1.09	1.34	1.16	24.06	26.74	24.37	22	20	21	22	15	19	18

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters.

[1] State average yields obtained by the Division of Crop and Livestock Estimates and published in the Agriculture Yearbooks, carried to nearest whole number.

TABLE 512.—*Corn: Cost of production, by States, 1925*

State	Number of reports	Average acreage in corn per farm	Average yield per acre	Gross cost per acre: Prepare and plant	Cultivate	Harvest	Market	Miscellaneous labor [1]	Commercial fertilizer	Manure	Seed	Land rent	Miscellaneous costs [2]	Total	Credit per acre (stover and fodder)	Net cost: Per acre	Per bushel
		Acres	*Bush.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
New York	135	6	44	8.48	5.12	8.94	3.58	0.02	3.27	9.19	0.83	6.93	4.06	50.42	8.78	41.64	0.95
New Jersey	56	13	56	7.91	5.09	11.76	3.17	.14	6.97	6.95	.60	7.63	5.81	56.03	7.37	48.66	.87
Pennsylvania	199	13	54	7.15	4.27	8.05	3.28	.11	2.32	8.22	.55	6.74	3.55	44.24	6.00	38.24	.71
Delaware	10	16	50	6.47	3.44	10.56	2.50		3.49	7.28	.62	8.40	3.37	46.13	5.26	40.87	.82
Maryland	79	24	53	5.22	3.18	7.26	3.26	.11	2.14	5.22	.53	7.35	2.73	37.00	4.92	32.08	.61
Virginia	177	21	35	6.32	4.34	5.06	2.78	.08	1.99	3.28	.48	7.20	2.47	34.00	4.80	29.20	.83
West Virginia	86	13	45	7.81	5.84	5.48	3.41	.20	2.25	3.70	.51	8.37	2.61	40.18	4.40	35.78	.80
North Carolina	126	23	27	5.79	4.53	3.04	2.16	.19	3.85	2.42	.51	6.99	2.78	32.26	2.99	29.27	1.08
South Carolina	89	32	16	3.95	3.64	2.10	2.37	.23	4.99	.80	.45	5.69	2.62	26.84	1.84	25.00	1.56
Georgia	178	37	15	3.95	3.49	1.65	1.72	.13	2.65	.66	.41	4.95	2.68	22.29	1.43	20.86	1.39
Florida	27	32	20	3.93	3.43	1.54	1.60		3.32	1.04	.40	3.11	3.03	21.40	1.54	19.86	.99
Ohio	430	24	54	5.77	3.61	7.01	2.57	.16	1.18	4.08	.46	6.64	2.76	34.24	3.50	30.74	.57
Indiana	382	39	49	4.46	2.90	4.09	1.86	.10	.81	2.20	.44	6.82	2.02	25.70	1.60	24.10	.49
Illinois	346	63	46	4.06	2.83	3.36	1.90	.11	.34	1.87	.54	7.22	2.00	24.23	.94	23.29	.51
Michigan	209	13	44	6.04	3.62	7.13	2.85	.07	.59	5.26	.54	5.64	3.13	34.87	4.87	30.00	.68
Wisconsin	297	17	48	4.94	3.61	5.47	3.19	.13	.32	6.57	.77	6.99	3.13	35.12	5.27	29.85	.62
Minnesota	288	36	38	4.21	3.39	4.01	2.17	.04	.06	3.36	.69	5.14	2.34	25.41	1.86	23.55	.62
Iowa	487	67	48	4.03	2.83	3.60	2.39	.11	.05	2.09	.53	8.97	2.51	27.11	.93	26.18	.55
Missouri	349	44	34	3.78	3.09	2.85	2.11	.22	.32	1.30	.33	5.92	1.79	21.71	1.31	20.40	.60
North Dakota	70	33	22	3.68	2.51	2.48	1.55	.05		1.04	.70	2.50	1.48	15.99	1.55	14.44	.66
South Dakota	140	80	21	3.46	2.26	2.64	1.60	.06	.01	1.37	.45	3.78	1.76	17.39	1.03	16.36	.78
Nebraska	226	94	30	2.89	1.97	2.61	1.41	.18	.01	.98	.29	5.12	1.74	17.20	.58	16.62	.55
Kansas	428	66	23	2.52	2.09	1.95	1.26	.06	.02	.48	.26	4.43	1.33	14.40	.72	13.68	.59
Kentucky	152	28	35	4.79	3.58	3.47	2.45	.14	1.17	1.49	.43	7.76	2.64	27.92	1.80	26.12	.75
Tennessee	121	35	28	4.72	3.75	2.54	2.86	.03	.87	1.60	.36	6.76	2.33	25.82	1.41	24.41	.87
Alabama	332	33	19	4.09	4.40	1.82	1.90	.09	2.15	.75	.36	4.83	2.37	22.76	1.17	21.59	1.14
Mississippi	170	33	23	4.23	4.95	2.14	2.10	.11	2.31	1.09	.51	5.55	2.63	25.62	.92	24.70	1.07
Louisiana	32	37	20	4.16	4.62	2.28	2.68	.30	1.91	1.39	.62	5.10	3.03	26.09	1.00	25.09	1.25
Texas	99	29	9	3.63	2.82	1.43	1.86	.12	.39	.88	.42	4.94	1.84	18.33	.79	17.54	1.95
Oklahoma	109	28	14	2.90	2.76	1.58	1.46	.07	.04	.39	.32	3.60	1.42	14.54	.70	13.84	.99
Arkansas	161	27	22	4.16	4.18	2.10	2.27	.04	.77	.99	.40	5.35	2.14	22.40	1.51	20.89	.95
Montana	28	29	14	4.02	1.05	1.86	2.19	.35		.13	.65	2.42	1.24	14.51	2.86	11.65	.83
Wyoming	16	22	25	3.82	2.64	4.79	2.44	1.25		2.62	.50	2.11	2.51	22.68	1.84	20.84	.83
Colorado	50	67	22	3.45	1.90	2.50	1.50	1.16	.04	.78	.34	4.25	1.64	17.56	2.28	15.28	.69

New Nexico	18	45	17	3.34	2.40	1.64	2.72	.71	-------	.03	.31	3.56	1.36	16.07	2.42	13.65	.80
Washington	12	45	45	5.86	3.18	3.50	4.43	5.01	-------	5.67	.48	12.55	2.24	42.92	2.00	40.92	.91
Total [3]	6,182	40	36	4.61	3.41	4.02	2.21	.15	1.10	2.74	.48	6.21	2.40	27.33	2.36	24.97	.69

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters. Figures for 1923 and 1924, see Agricultural Yearbooks, 1924, p. 1136, and 1925, p. 1330.

[1] Includes miscellaneous labor, irrigating, and water.
[2] Sacks and twine, crop insurance, use of implements, use of storage buildings, and overhead.
[3] The total includes 68 records from the following States in which there were not enough reports to show State averages: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, Utah, and California.

TABLE 513.—*Corn: Cost of production, by yield groups, 1925*

Yield group (bushels per acre)	Number of reports	Average acreage in corn per farm	Average yield per acre	Gross cost per acre: Prepare and plant	Gross cost per acre: Cultivate	Gross cost per acre: Harvest	Gross cost per acre: Market	Gross cost per acre: Miscellaneous labor [1]	Gross cost per acre: Fertilizer and manure	Gross cost per acre: Seed	Gross cost per acre: Land rent	Gross cost per acre: Miscellaneous costs [2]	Gross cost per acre: Total	Credit per acre (stover and fodder)	Net cost: Per acre	Net cost: Per bushel
		Acres	*Bush.*	*Dolls*	*Dolls.*	*Dolls*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
All States:																
7 and under	309	42	3	3.41	2.68	1.41	0.50	0.07	1.65	0.42	4.07	2.01	16.22	1.54	14.68	4.89
8 to 17	743	43	13	3.63	3.18	1.88	1.29	.11	2.00	.38	4.04	1.79	18.30	1.23	17.07	1.31
18 to 27	1,163	39	22	4.05	3.42	2.58	1.82	.13	2.57	.42	4.85	2.05	21.89	1.67	20.22	.92
28 to 37	999	40	32	4.46	3.35	3.46	2.03	.11	3.38	.47	5.99	2.20	25.45	2.22	23.23	.73
38 to 47	1,137	41	41	4.86	3.43	4.62	2.42	.19	3.90	.50	6.90	2.46	29.28	2.71	26.57	.65
48 to 57	963	38	51	5.35	3.44	5.52	2.60	.18	5.36	.55	7.59	2.84	33.43	2.89	30.54	.60
58 to 67	503	38	61	4.99	3.67	5.87	2.69	.12	5.12	.53	8.07	2.85	33.91	3.00	30.91	.51
68 to 77	230	33	72	5.89	3.78	7.56	2.88	.30	7.69	.57	8.39	3.02	40.08	4.57	35.51	.49
78 and over	130	19	88	7.38	4.47	8.49	3.47	.40	10.75	.68	9.14	4.65	49.43	4.40	45.03	.51
Corn Belt: [3]																
17 and under	42	59	11	3.05	2.10	1.80	1.20	.08	1.31	.35	4.18	1.49	15.66	1.06	14.60	1.33
18 to 27	162	57	23	3.28	2.54	2.38	1.41	.13	1.28	.35	5.07	1.58	18.02	1.10	16.92	.74
28 to 37	313	54	32	3.46	2.50	2.76	1.57	.12	1.81	.37	5.72	1.62	19.93	1.18	18.75	.59
38 to 47	522	60	41	4.01	2.82	3.50	2.02	.18	1.99	.45	7.31	1.95	24.23	1.07	23.16	.56
48 to 57	463	60	51	4.32	2.89	4.10	2.24	.12	2.48	.50	8.22	2.43	27.30	1.15	26.15	.51
58 to 67	282	50	61	4.25	2.97	4.68	2.45	.07	2.69	.49	8.64	2.69	28.93	1.69	27.24	.45
68 to 77	103	53	71	5.06	3.17	5.79	2.57	.21	3.25	.52	8.77	2.65	31.99	2.06	29.93	.42
78 and over	31	37	84	5.41	2.91	5.02	2.63	.05	3.27	.67	9.30	2.46	31.72	1.70	30.02	.36

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters. Figures for 1923 and 1924, see Agriculture Yearbooks 1924, p. 1135, and 1925, p. 1332.

[1] Includes miscellaneous labor, irrigating, and water.
[2] Includes sacks and twine, crop insurance, use of implements, use of storage buildings, and overhead.
[3] Corn Belt as used here includes Indiana, Illinois, Iowa, Western Ohio, southeast corner of South Dakota, eastern Nebraska, northeast corner of Kansas, and the northern three-fourths of Missouri.

TABLE 514.—*Corn: Comparative production costs and yields, by States, 1923, 1924, and 1925*

State	Averages for farms reporting									Average yields per acre [1]			
	Net cost per bushel			Net cost per acre			Yield per acre						
	1923	1924	1925	1923	1924	1925	1923	1924	1925	1923	1924	1925	Average 1921–1925
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*	*Bush.*
Vermont	0.90	1.24	------	46.87	50.89	------	52	41	------	39	47	48	46
Massachusetts	1.30	------	------	65.10	------	------	50	------	------	43	45	50	45
Connecticut	1.33	1.68	------	78.33	78.87	------	59	47	------	41	43	50	46
New York	.91	.95	0.95	35.43	38.18	41.64	39	40	44	32	33	30	37
New Jersey	.79	1.07	.87	41.31	44.01	48.66	52	41	56	40	34	52	43
Pennsylvania	.78	.91	.71	38.03	35.39	38.24	49	39	54	40	36	51	44
Delaware	.73	.95	.82	31.54	32.19	40.87	43	34	50	33	27	37	33
Maryland	.68	.80	.61	31.80	32.98	32.08	47	41	53	39	31	45	39
Virginia	.69	.83	.83	27.01	27.53	29.20	39	33	35	29	21	22	25
West Virginia	.79	.91	.80	33.28	30.91	35.78	42	34	45	34	28	36	33
North Carolina	.95	1.18	1.08	29.52	29.52	29.27	31	25	27	22	18	18	20
South Carolina	1.01	1.17	1.56	23.22	24.58	25.00	23	21	16	16	12	12	14
Georgia	1.05	1.02	1.39	18.88	18.45	20.86	18	18	15	12	12	11	12
Florida	1.12	1.04	.90	21.37	25.00	19.86	19	24	20	12	14	15	14
Ohio	.64	.84	.57	31.45	30.33	30.74	49	36	54	41	26	48	39
Indiana	.55	.74	.49	24.57	24.35	24.10	45	33	40	38	25	44	36
Illinois	.52	.58	.51	21.38	21.88	23.29	41	38	46	38	32	42	36
Michigan	.74	.90	.68	28.99	27.12	30.00	39	30	44	34	26	40	36
Wisconsin	.71	1.04	.62	29.03	27.04	29.85	41	26	48	37	26	46	40
Minnesota	.57	.78	.62	22.18	22.49	23.55	39	29	38	36	28	36	35
Iowa	.52	.75	.55	24.09	24.87	26.18	46	33	48	41	28	43	40
Missouri	.61	.68	.60	20.21	20.51	20.40	33	30	34	30	26	30	28
North Dakota	.42	.73	.66	13.40	11.70	14.44	32	16	22	34	20	24	26
South Dakota	.50	.71	.78	17.54	16.36	16.36	35	23	21	31	22	18	27
Nebraska	.49	.68	.55	17.10	17.06	16.62	35	25	30	33	24	26	27
Kansas	.53	.54	.59	13.71	13.99	13.68	26	26	23	22	22	16	20
Kentucky	.80	.80	.76	28.01	25.50	26.44	35	32	35	28	25	26	27
Tennessee	.77	.81	.87	24.77	25.09	24.41	32	31	28	24	22	20	23
Alabama	.99	1.14	1.14	19.83	21.57	21.59	20	19	19	14	13	14	14
Mississippi	1.17	1.17	1.07	23.38	22.29	24.70	20	19	23	14	12	18	16
Louisiana	1.15	1.35	1.25	21.86	24.32	25.09	19	18	20	15	12	18	16
Texas	.81	.86	1.95	17.76	18.02	17.54	22	21	9	18	17	8	18
Oklahoma	.86	.70	.99	13.71	14.79	13.84	16	21	14	12	20	8	16
Arkansas	1.06	.93	.95	22.30	20.43	20.89	21	22	22	20	16	14	17
Montana	.65	.90	.83	15.49	13.45	11.65	24	15	14	26	18	16	21
Wyoming	.49	.85	.83	14.15	14.38	20.84	29	17	25	27	14	23	22
Colorado	.57	.86	.69	15.83	15.50	15.28	28	18	22	25	10	15	16
New Mexico	.85	.78	.80	18.01	12.43	13.65	22	16	17	16	20	18	18
Idaho	.66	1.02	------	28.91	30.55	------	44	30	------	42	35	41	37
Washington	.70	------	1.15	23.09	------	51.64	33	------	45	37	30	35	37
Oregon	.83	.89	------	33.32	33.83	------	40	38	------	35	30	29	32

Division of Farm Managements and Costs. From returns to mail inquiry sent to crop reporters.

[1] State average yields obtained by the Division of Crop and Livestock Estimates and published in the Agriculture Yearbooks, carried to nearest whole number.

Table 515.—*Oats: Cost of production, by States, 1925*

State	Number of reports	Average acreage in oats per farm	Average yield per acre	Gross cost per acre										Credit per acre (straw)	Net cost	
				Prepare and plant	Harvest and thresh	Market	Miscellaneous labor [1]	Commercial fertilizer	Manure	Seed	Land rent	Miscellaneous costs [2]	Total		Per acre	Per bushel
		Acres	*Bu.*													
Maine	25	8	54	$8.12	$10.05	$2.41	$0.23	$2.28	$4.92	$3.17	$5.42	$5.48	$42.08	$4.96	$37.12	$0.69
Vermont	13	8	43	8.11	9.92	1.60	.53	1.80	5.31	2.60	6.55	2.21	38.63	7.27	31.36	.73
New York	219	12	44	7.04	7.43	2.09	.23	2.49	1.69	2.20	6.42	3.83	33.42	5.93	27.49	.62
New Jersey	19	10	31	5.42	6.20	1.61	.12	1.79	.26	1.91	5.28	3.05	25.64	7.37	18.27	.59
Pennsylvania	189	12	40	6.07	5.89	1.98	.13	2.27	.84	1.79	5.66	3.27	27.90	4.53	23.37	.58
Maryland	30	8	35	4.51	5.23	1.72	.28	3.38	.60	1.60	6.54	3.15	27.01	4.37	22.64	.65
Virginia	82	9	28	5.27	4.79	1.74	.12	2.38	1.09	1.66	6.12	2.08	25.25	3.18	22.07	.79
West Virginia	43	8	35	6.03	5.04	2.32	.23	1.74	1.15	1.88	6.72	2.65	27.76	3.57	24.19	.69
No. Carolina	53	9	27	4.28	4.03	1.60	.41	2.25	1.14	1.90	5.79	2.34	23.74	1.84	21.90	.81
So. Carolina	59	18	27	3.19	5.37	1.58	.24	2.89	.25	2.14	5.71	2.60	[illegible]	1.85	22.12	.82
Georgia	82	18	23	2.64	4.18	1.10	.29	2.10	.54	1.93	4.51	1.90	19.19	1.36	17.83	.78
Ohio	347	17	47	4.09	5.15	1.30	.17	1.07	.32	1.33	6.09	2.75	22.27	2.41	19.86	.42
Indiana	268	24	34	2.49	3.68	.91	.16	.43	.34	1.18	6.20	2.05	17.44	1.66	15.78	.46
Illinois	295	38	37	2.22	3.78	1.12	.16	.16	.41	1.31	6.62	2.02	17.80	1.26	16.54	.45
Michigan	210	14	38	5.30	5.02	1.37	.21	.85	1.11	1.14	5.61	2.87	23.48	2.70	20.78	.55
Wisconsin	357	20	49	4.42	5.36	2.27	.32	.09	1.33	1.48	6.60	3.30	25.17	3.26	21.91	.45
Minnesota	354	40	47	3.41	4.53	1.44	.15	.04	.55	1.29	4.75	2.44	18.60	.87	17.73	.38
Iowa	451	42	44	1.96	4.15	1.40	.18	.04	.27	1.49	8.05	2.47	20.01	1.17	18.84	.43
Missouri	209	23	29	2.49	4.00	1.25	.21	.23	.38	1.35	4.52	1.87	16.30	1.30	15.00	.52
North Dakota	162	53	32	3.47	3.83	1.00	.12	-----	.18	.92	2.62	2.05	14.19	.53	13.66	.43
South Dakota	136	58	36	2.45	3.89	1.52	.18	-----	.42	1.07	3.72	2.17	15.42	.66	14.76	.41
Nebraska	168	34	28	2.10	3.56	1.11	.27	.02	.23	1.15	5.13	2.03	15.60	.85	14.75	.53
Kansas	318	26	27	2.66	3.93	1.01	.07	.02	.19	1.43	4.22	1.64	15.17	.66	14.51	.54
Kentucky	41	9	26	3.13	5.06	2.47	.58	1.05	.42	1.31	5.85	2.72	22.59	2.57	20.02	.77
Tennessee	39	12	22	3.83	4.01	1.41	.31	1.11	.47	1.52	5.32	2.41	20.39	1.35	19.04	.87
Alabama	83	10	21	3.14	4.10	1.56	.29	1.65	.60	1.79	4.16	1.85	19.14	1.30	17.84	.85
Mississippi	36	10	22	3.07	4.49	1.71	.06	.78	.56	1.60	5.30	2.34	19.91	1.11	18.80	.85
Texas	32	35	18	2.72	2.81	1.60	.25	-----	-----	1.50	4.12	1.72	14.72	.52	14.20	.79
Oklahoma	77	27	25	2.77	4.24	1.04	.10	-----	.11	1.41	3.07	1.58	14.32	.61	13.71	.55
Arkansas	36	19	21	2.96	4.33	2.25	.28	.51	.26	1.49	3.50	2.24	17.82	1.52	16.30	.78
Montana	54	25	24	4.12	3.47	1.30	.69	.01	.47	1.05	3.26	1.50	15.87	.72	15.15	.63
Wyoming	20	16	32	5.13	4.71	3.25	1.95	-----	-----	1.54	2.55	2.57	21.70	2.37	19.33	.60
Colorado	27	16	34	4.05	5.17	2.04	2.21	-----	.41	1.59	6.65	4.06	26.18	1.13	25.05	.74
Utah	27	9	53	5.44	8.59	2.41	3.69	-----	2.85	2.19	14.28	3.41	42.86	1.63	41.23	.78
Idaho	12	10	44	3.95	6.25	2.29	1.64	-----	.25	1.46	7.85	2.71	26.40	.92	25.48	.58
Washington	47	50	51	4.74	6.41	1.90	.40	.20	.54	1.86	9.56	3.61	29.25	1.88	27.37	.54
Oregon	21	33	37	4.47	4.83	1.08	.54	.10	.42	1.68	7.50	3.37	23.99	1.12	22.87	.62
California	16	64	37	3.70	5.18	2.01	.47	-----	.30	2.33	5.98	2.94	22.91	3.09	19.82	.54
Total [3]	4675	26	37	3.61	4.68	1.44	.25	.66	.63	1.46	5.77	2.49	20.99	1.98	19.01	.51

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters. Figures for 1923 and 1924, see Agriculture Yearbooks, 1924, p. 1138, and 1925, p. 1334.

[1] Includes miscellaneous labor, irrigating and water, seed treatment, and material.
[2] Sacks and twine, crop insurance, use of implements, use of storage buildings, and overhead
[3] The total includes 18 records from the following States in which there were not enough reports to show State averages: New Hampshire, Connecticut, Florida, Louisiana, New Mexico, and Nevada.

TABLE 516.—*Oats: Comparative production costs and yields, by States, 1923, 1924, and 1925*

State	Averages for farms reporting									Average yields per acre [1]			
	Net cost per bushel			Net cost per acre			Yield per acre						
	1923	1924	1925	1923	1924	1925	1923	1924	1925	1923	1924	1925	Average 1921–1925
	Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*	*Bus.*
Maine	0.82	0.95	0.69	39.20	39.73	37.12	48	42	54	37	37	45	39
Vermont	.81	.84	.73	36.67	36.91	31.36	45	44	43	35	38	40	36
New York	.63	.63	.62	25.23	25.69	27.49	40	41	44	32	36	36	32
New Jersey	.65	.65	.59	20.04	22.92	18.27	31	35	31	24	32	30	28
Pennsylvania	.65	.55	.58	22.20	22.70	23.37	34	41	40	29	36	35	32
Maryland	.58	.62	.65	20.38	22.28	22.64	35	36	35	30	34	32	31
Virginia	.70	.66	.79	19.62	18.60	22.07	28	28	28	22	24	22	22
West Virginia	.83	.73	.69	22.31	22.52	24.19	27	31	35	24	26	27	24
North Carolina	.79	.87	.81	21.28	20.97	21.90	27	24	27	22	18	19	20
South Carolina	.68	.76	.82	19.79	21.21	22.12	29	28	27	24	21	19	22
Georgia	.72	.76	.78	16.53	16.63	17.83	23	22	23	18	17	17	18
Ohio	.51	.42	.42	19.95	20.22	19.86	39	48	47	34	41	42	33
Indiana	.49	.42	.46	16.04	17.07	15.78	33	41	34	28	38	28	28
Illinois	.41	.40	.45	15.88	16.83	16.54	39	42	37	35	40	32	32
Michigan	.50	.45	.55	19.68	20.82	20.78	39	46	38	32	42	32	31
Wisconsin	.51	.49	.45	19.99	20.49	21.91	39	42	49	36	40	48	38
Minnesota	.42	.40	.38	17.14	18.26	17.73	41	46	47	37	43	42	36
Iowa	.43	.43	.43	17.23	18.77	18.84	40	44	44	36	43	40	36
Missouri	.55	.55	.52	14.84	15.48	15.00	27	28	29	25	28	26	22
North Dakota	.44	.38	.43	11.55	13.67	13.66	26	36	32	23	34	27	27
South Dakota	.41	.38	.41	15.01	14.37	14.76	37	38	36	34	37	34	32
Nebraska	.41	.50	.53	14.90	16.12	14.75	36	32	28	33	31	27	28
Kansas	.47	.54	.54	14.57	15.65	14.51	31	29	27	28	26	23	23
Kentucky	.81	.70	.83	17.90	17.57	21.69	22	25	26	21	23	21	20
Tennessee	.75	.69	.87	17.21	18.61	19.04	23	27	22	21	22	22	20
Alabama	.72	.71	.85	15.05	16.42	17.84	21	23	21	17	15	17	18
Mississippi	.80	.77	.85	16.75	16.99	18.80	21	22	22	19	18	19	19
Texas	.48	.50	.79	15.84	16.41	14.20	33	33	18	32	34	12	24
Oklahoma	.57	.48	.55	13.12	14.55	13.71	23	30	25	20	27	23	22
Arkansas	.67	.56	.78	16.87	14.57	16.30	25	26	21	23	20	16	21
Montana	.51	.51	.63	16.44	15.75	15.15	32	31	24	33	30	22	28
Wyoming	.48	.59	.60	17.74	17.76	19.33	37	30	32	34	31	35	32
Colorado	.57	.67	.74	22.68	22.04	25.05	40	33	34	32	25	27	28
New Mexico	.63	-----	-----	18.82	-----	-----	30	-----	-----	20	24	-----	21
Utah	.74	.80	.78	37.11	35.78	41.23	50	45	53	38	40	47	39
Idaho	.56	.68	.58	28.07	24.98	25.48	50	37	44	46	36	49	42
Washington	.51	.68	.54	29.49	26.37	27.37	58	39	51	57	40	44	46
Oregon	.54	.59	.62	25.97	23.55	22.87	48	40	37	39	31	33	31
California	.57	-----	.54	19.84	-----	19.82	35	-----	37	32	24	34	30

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters.

[1] State average yields obtained by the Division of Crop and Livestock Estimates and published in the Agriculture Yearbooks, carried to nearest whole number.

TABLE 517.—*Oats: Cost of production, by yield groups, 1925*

Yield group (bushels per acre)	Number of reports	Average acreage in oats per farm	Average yield per acre	Gross cost per acre: Prepare and plant	Harvest [1]	Market	Miscellaneous labor [2]	Fertilizer and manure	Seed	Land rent	Miscellaneous costs [3]	Total	Credit per acre (straw)	Net cost: Per acre	Per bushel
All States:		*Acres*	*Bu.*												
17 and under	423	20	11	$3.16	$3.15	$0.82	$0.23	$0.81	$1.35	$3.85	$1.85	$15.22	$0.92	$14.30	$1.30
18 to 22	457	24	20	3.15	3.60	1.06	.23	.93	1.37	4.38	1.96	16.68	1.28	15.40	.77
23 to 27	387	26	25	3.29	3.77	1.15	.21	1.12	1.39	4.60	2.00	17.53	1.46	16.07	.64
28 to 32	644	29	30	3.32	4.18	1.20	.19	1.14	1.41	5.18	2.10	18.72	1.71	17.01	.57
33 to 37	393	28	35	3.74	4.59	1.36	.24	1.26	1.44	5.22	2.40	20.25	2.04	18.21	.52
38 to 42	826	27	40	3.76	4.90	1.49	.24	1.61	1.51	6.07	2.79	22.37	2.27	20.10	.50
43 to 47	273	29	45	3.72	5.07	1.52	.23	1.52	1.49	6.39	2.50	22.44	2.25	20.19	.45
48 to 52	631	29	50	4.01	5.55	1.68	.30	1.48	1.53	6.83	2.95	24.33	2.48	21.85	.44
53 to 57	152	32	55	3.87	5.18	1.81	.26	1.70	1.54	6.99	3.10	24.45	2.84	21.61	.39
58 to 62	262	27	60	3.80	5.62	1.81	.30	1.08	1.49	7.13	2.89	24.12	2.33	21.79	.36
63 and over	227	24	72	4.30	6.75	2.08	.51	1.49	1.69	8.25	3.26	28.33	3.06	25.27	.35

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters. Figures for 1923 and 1924, see Agriculture Yearbooks, 1924, p. 1137, and 1925, p. 1335.

[1] Threshing is included under harvesting.
[2] Includes miscellaneous labor, irrigating and water, seed treatment, and material.
[3] Sacks and twine, crop insurance, use of implements, use of storage buildings, and overhead.

TABLE 518.—*Potatoes: Cost of production, 1925*

State groups	Number of reports	Average acreage in potatoes per farm	Average yield per acre	Gross cost per acre: Prepare and plant	Cultivate	Harvest	Market	Miscellaneous labor [1]	Fertilizer and manure	Seed	Land rent	Miscellaneous costs [2]	Total	Credit per acre (culls)	Net cost: Per acre	Per bushel
		Acres	*Bu.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*	*Dlls.*
Northeastern [3]	328	8	149	12.56	7.05	14.94	12.97	5.04	25.71	14.22	8.89	7.19	108.57	0.69	107.88	0.72
Eastern [4]	130	5	100	9.81	5.78	9.66	8.55	1.56	14.95	14.48	9.19	4.99	78.97	.46	78.51	.79
Southeastern [5]	49	8	83	8.37	4.49	7.13	5.15	1.29	18.64	15.21	6.23	5.66	72.17	.20	71.97	.87
Central [6]	251	4	96	7.78	4.37	9.64	6.76	1.75	5.83	11.15	7.62	3.14	58.04	.04	58.00	.60
North Central [7]	423	6	106	7.47	3.93	9.80	7.52	2.29	6.51	7.68	5.97	3.77	54.94	.18	54.76	.52
West South Central [8]	32	3	93	8.81	4.08	8.86	6.38	2.18	10.75	16.73	5.97	4.55	68.31	-----	68.31	.73
Western [9]	101	10	156	10.07	5.05	14.74	13.39	3.78	5.95	14.92	13.17	10.13	91.20	.63	90.57	.58

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters.

, New Jersey,

and Pennsylvania.
[4] Maryland, Virginia, West Virginia, North Carolina, Kentucky, and Tennessee.
[5] South Carolina, Georgia, Florida, Alabama, and Mississippi.
[6] Ohio, Indiana, Illinois, Iowa, Missouri, Kansas, and Nebraska.
[7] Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.
[8] Louisiana, Texas, Oklahoma, and Arkansas.
[9] Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Idaho, Washington, Oregon, and California.

Table 519.—*Potatoes: Comparative production costs, State groups, in 1923, 1924, and 1925*

State groups	Number of reports			Net cost per acre			Net cost per bushel			Yield per acre		
	1923	1924	1925	1923	1924	1925	1923	1924	1925	1923	1924	1925
				Dolls.	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Bus.*	*Bus.*	*Bus.*
Northeastern [1]	574	431	328	105.50	99.54	107.88	0.62	0.58	0.72	170	171	149
Eastern [2]	231	167	130	80.46	82.06	78.51	.69	.67	.79	116	123	100
Southeastern [3]	112	53	49	75.66	80.01	71.97	.78	.82	.87	97	98	83
Central [4]	407	212	251	52.48	56.09	58.00	.52	.51	.60	101	111	96
North Central [5]	964	508	423	51.34	47.10	54.76	.44	.38	.52	116	125	106
West South Central [6]	85	37	32	54.76	51.58	68.31	.67	.68	.73	82	76	93
Western [7]	321	181	101	68.83	67.83	90.57	.46	.47	.58	149	144	156

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters.

[1] Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania.
[2] Maryland, Virginia, West Virginia, North Carolina, Kentucky, and Tennessee.
[3] South Carolina, Georgia, Florida, Alabama, and Mississippi.
[4] Ohio, Indiana, Illinois, Iowa, Missouri, Kansas, and Nebraska.
[5] Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.
[6] Louisiana, Texas, Oklahoma, and Arkansas.
[7] Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Idaho, Washington, Oregon, and California.

Table 520.—*Cotton: Cost of production, by yield groups, 1925*

Yield group (pounds of lint per acre)	Number of reports	Average acreage in cotton per farm	Average yield of lint per acre	Gross cost per acre										Credit per acre (cottonseed)	Net cost of lint	
				Prepare and plant	Cultivate	Harvest and market	Miscellaneous labor [1]	Fertilizer and manure	Seed	Ginning	Land rent	Miscellaneous costs [2]	Total		Per acre	Per pound
		Acres	*Lbs*	*Dolls*	*Dolls*	*Dolls*	*Dolls*	*Dolls*	*Dolls*	*Dolls*	*Dolls*	*Dolls*	*Dolls*	*Dols*	*Dolls*	*Dolls*
60 and under	47	52	34	3.94	5.46	4.06	0.53	2.96	1.24	0.56	5.43	2.12	26.30	2.04	21.26	0.71
61 to 100	79	60	89	4.00	5.74	5.34	1.05	4.52	1.21	1.19	4.71	2.82	30.58	2.75	27.83	.31
101 to 140	112	43	126	4.46	5.50	6.54	.58	2.79	1.11	1.68	4.53	2.53	20.72	3.30	26.42	.21
141 to 180	207	48	162	4.47	6.01	7.66	.71	4.62	1.27	1.88	5.15	2.65	34.42	4.71	29.71	.18
181 to 220	187	46	202	4.44	6.32	8.13	.76	5.69	1.24	2.25	5.42	3.10	37.35	6.01	31.34	.16
221 to 260	277	52	246	4.63	6.46	9.78	.88	5.39	1.33	2.78	6.14	2.85	40.24	7.10	33.14	.13
261 to 300	158	44	292	4.70	7.00	10.87	.81	6.38	1.33	3.15	6.06	3.07	43.37	7.52	35.85	.12
301 to 340	54	54	325	4.90	6.96	12.83	.95	5.64	1.47	4.12	8.03	2.65	47.55	8.92	38.63	.12
341 to 380	70	44	360	5.78	8.32	13.40	.64	7.07	1.49	4.16	7.84	3.85	52.55	8.48	44.07	.12
381 to 420	79	59	400	5.61	7.36	14.07	.76	6.61	1.41	4.61	7.76	2.77	50.96	9.63	41.33	.10
421 to 460	39	49	446	6.82	8.16	16.11	1.00	9.59	1.44	5.17	7.96	4.89	61.14	11.42	49.72	.11
461 to 500	65	37	496	5.58	8.08	15.11	.78	7.23	1.36	6.08	8.97	2.81	56.00	11.70	44.30	.09
501 and over	31	30	600	5.81	8.26	17.25	.31	6.38	1.43	6.57	8.69	3.75	58.45	11.54	46.91	.08

Division of Farm Management and Costs. From returns to mail inquiry sent to crop reporters.

[1] Includes miscellaneous labor, irrigating and water, dusting, and dusting material.
[2] Includes picking sacks and sheets, crop insurance, use of implements, use of storage buildings, and overhead.

TABLE 521.—*Crops: Average weight in pounds per measured bushel of wheat, oats, and barley, United States, 1909–1926*

Year	Weight per measured bushel[1]			Year	Weight per measured bushel[1]		
	Wheat	Oats	Barley		Wheat	Oats	Barley
	Pounds	*Pounds*	*Pounds*		*Pounds*	*Pounds*	*Pounds*
1909	57.9	32.7	-------	1918	58.8	33.2	46.9
1910	58.5	32.7	46.9	1919	56.3	31.1	45.2
1911	57.8	31.1	46.0	1920	57.4	33.1	46.0
1912	58.3	33.0	46.8	1921	57.0	28.3	44.4
1913	58.7	32.1	46.5	1922	57.7	32.0	46.2
1914	58.0	31.5	46.2	1923	57.4	32.1	45.3
1915	57.9	33.0	47.4	1924	58.9	33.4	47.0
1916	57.1	31.2	45.2	1925	58.3	32.9	45.9
1917	58.5	33.4	46.6	1926	59.1	30.9	45.9

Division of Crop and Livestock Estimates. As reported by crop reporters on November 1.

[1] Standard weights: Wheat, 60 lbs.; oats, 32 lbs.; barley, 48 lbs

FARM PRICES

TABLE 522.—*Estimated prices of agricultural products received by producers, weighted by crop years, 1908–1925*

Year	Grains and seeds											
	Wheat, year beginning July 1	Corn, year beginning Nov. 1	Oats, year beginning Aug. 1	Barley, year beginning Aug. 1	Rye, year beginning July 1	Buckwheat, year beginning Sept. 1	Flaxseed, year beginning Sept. 1	Soy beans, year beginning Oct. 1	Cowpeas, year beginning Aug. 1	Clover seed, year beginning Sept. 1	Timothy seed, year beginning Aug. 1	Cottonseed, year beginning Aug. 1
	Cts. p. bu.	*Cts. p. bu.*	*Cts. p. bu.*	*Cts. p. bu.*	*Cts. p. bu.*	*Cts. p. bu.*	*Cts. p. bu.*	*Cts. p. bu.*	*Cts. p. bu.*	*Dolls. p. bu.*	*Dolls. p. bu.*	*Dolls. p. ton*
1908	94.8	66.9	49.3	57.0	74.5	77.3	117.3	-------	-------	-------	-------	-------
1909	100.7	63.2	43.2	55.0	74.6	72.1	148.6	-------	-------	-------	-------	-------
1910	91.7	53.5	36.2	60.8	73.4	67.5	229.8	-------	-------	8.30	4.28	25.80
1911	88.3	68.8	46.1	81.9	81.0	75.4	195.8	-------	-------	11.25	6.87	17.08
1912	83.3	56.7	34.9	52.7	68.7	68.3	127.4	-------	-------	9.71	2.01	19.10
1913	79.3	71.8	38.9	53.0	62.9	76.6	123.9	175.6	-------	7.75	2.13	22.39
1914	99.4	71.4	44.9	54.8	83.3	81.1	131.6	218.0	-------	8.41	2.49	16.50
1915	98.2	69.6	39.3	53.8	85.0	81.5	169.6	210.6	151.9	9.98	2.89	32.65
1916	144.4	119.0	51.4	83.4	113.0	126.5	233.8	215.6	189.7	9.54	2.42	49.13
1917	205.8	148.1	72.1	122.5	176.4	167.1	315.9	305.4	236.2	14.48	3.50	66.15
1918	206.3	153.1	70.1	100.0	152.1	164.7	374.2	323.2	254.3	21.01	4.19	65.23
1919	218.6	151.5	80.3	124.9	146.9	159.2	427.0	344.6	319.4	28.34	4.98	67.27
1920	182.9	62.1	51.1	70.7	148.2	126.8	217.6	279.9	273.8	11.81	3.29	22.95
1921	104.4	54.3	33.4	48.4	86.9	89.1	171.0	216.6	190.7	11.14	2.64	29.72
1922	98.0	76.7	39.0	51.8	68.1	89.9	209.5	200.0	172.8	10.71	2.60	34.70
1923	92.4	84.0	42.6	56.8	59.4	96.3	212.3	212.4	213.6	12.38	3.19	42.23
1924	127.8	105.8	48.3	77.1	96.3	108.6	220.7	229.4	272.7	15.35	3.11	34.08
1925	145.9	69.9	38.8	58.7	83.1	87.5	224.7	222.8	309.1	15.87	3.33	30.82

TABLE 522.—*Estimated prices of agricultural products received by producers, weighted by crop years, 1908–1925*—Continued

Year	Fruits and vegetables				
	Apples, year beginning June 1	Peaches, year beginning June 1	Pears, year beginning Aug. 1	Potatoes, year beginning July 1	Sweet potatoes, year beginning July 1
	Cts. p. bu.	*Cts. p. bu.*	*Cts. p. bu.*	*Cts. p. bu.*	*Cts. p. bu.*
1908				79.0	
1909				57.9	
1910	88.1	113.3	100.9	61.3	78.7
1911	76.6	138.2	109.4	99.6	92.2
1912	66.8	111.2	100.4	55.6	85.6
1913	93.0	131.3	111.2	70.6	84.0
1914	62.7	108.7	93.7	58.0	84.6
1915	71.0	88.2	82.5	70.8	75.4
1916	90.7	115.0	104.8	166.3	92.9
1917	113.6	148.0	127.4	122.5	122.3
1918	137.5	176.6	161.1	125.6	150.0
1919	186.1	200.9	185.7	223.8	161.7
1920	133.8	228.9	194.1	131.5	144.8
1921	195.2	213.5	172.2	121.3	110.9
1922	109.4	152.3	139.7	73.9	97.4
1923	117.4	175.8	165.5	94.2	121.7
1924	122.1	153.7	165.4	76.5	152.4
1925	127.0	178.4	168.2	183.5	165.9

Year	Hay crops					Other commodities	
	Hay (all loose), year beginning July 1	Timothy hay, year beginning July 1	Clover hay, year beginning July 1	Alfalfa hay, year beginning July 1	Prairie hay, year beginning July 1	Cotton (lint), year beginning Aug. 1	Peanuts, year beginning Nov. 1
	Dollars per ton	*Dollars per ton*	*Dollars per ton*	*Dollars per ton*	*Dollars per ton*	*Cents per pound*	*Cents per pound*
1908	9.47					9.0	
1909	10.58					13.6	
1910	11.54					14.0	4.6
1911	14.36					9.6	4.4
1912	11.17					11.5	4.6
1913	11.49					12.5	4.6
1914	10.92	13.87	12.83	9.12	7.69	7.4	4.4
1915	10.34	13.09	11.29	9.39	7.13	11.2	4.3
1916	11.21	12.83	11.33	12.76	8.61	17.3	4.8
1917	16.60	18.67	17.21	18.42	13.31	27.1	7.1
1918	19.88	22.66	20.93	20.35	16.03	28.8	6.5
1919	21.34	25.13	23.69	22.70	16.78	35.2	9.2
1920	16.51	20.64	19.48	15.96	10.94	15.8	4.7
1921	11.83	14.82	14.15	10.58	7.62	17.0	3.7
1922	11.68	14.18	13.03	12.82	8.79	22.8	5.5
1923	12.93	16.53	15.14	13.54	8.92	28.7	6.5
1924	12.76	14.30	13.43	13.81	8.70	22.9	5.7
1925	12.77	15.40	14.52	13.52	9.36	19.6	4.7

Division of Crop and Livestock Estimates.

TABLE 523.—*Estimated prices of animals and animal products received by producers, weighted by calendar and by crop years, 1910–1926*

Year	Livestock and livestock products														
	Hogs		Beef cattle		Veal calves	Sheep	Lambs		Horses	Chickens		Eggs		Butter	Wool
	Year beginning Jan. 1	Year beginning Nov. 1	Year beginning Jan 1	Year beginning Aug. 1	Year beginning Jan. 1	Year beginning Jan. 1	Year beginning Jan 1	Year beginning June 1	Year beginning Jan. 1	Year beginning Jan. 1	Year beginning July 1	Year beginning Jan. 1	Year beginning Apr. 1	Year beginning Jan. 1	Year beginning Jan. 1
	Dolls. per 100 lbs.	*Dolls. per 100 lbs.*	*Dolls per 100 lbs.*	*Dolls. per 100 lbs.*	*Dolls. per 100 lbs.*	*Dolls. per 100 lbs.*	*Dolls per 100 lbs*	*Dolls. per 100 lbs.*	*Dolls. per head*	*Cts. per lb.*	*Cts. per lb.*	*Cts. per doz*	*Cts. per doz.*	*Cts. per lb.*	*Cts. per lb.*
1910	8.10	6.61	4.78	4.55	6.42	5.24	6.40	5.79	146	11.3	11.0	20.5	19.3	25.5	20.5
1911	6.30	6.43	4.46	4.69	6.04	4.16	5.19	5.28	141	10.4	10.4	16.9	18.2	22.9	15.6
1912	6.66	7.39	5.14	5.60	6.45	4.24	5.62	5.96	140	10.9	11.2	19.8	18.9	25.7	18.1
1913	7.44	7.60	5.91	6.12	7.48	4.55	6.06	6.03	142	11.7	12.0	18.8	19.8	26.7	16.4
1914	7.52	6.69	6.24	6.12	7.83	4.79	6.34	6.49	135	11.8	11.5	20.1	19.3	25.1	17.7
1915	6.56	7.61	6.01	6.24	7.63	5.27	6.86	7.38	130	11.6	12.0	18.9	19.0	25.7	22.8
1916	8.13	12.10	6.48	7.31	8.35	6.29	8.22	9.50	130	13.4	14.6	21.4	23.3	28.0	27.9
1917	13.46	15.78	8.17	8.92	10.51	9.45	12.31	13.60	132	16.9	18.4	31.3	33.0	35.9	47.8
1918	15.85	16.60	9.46	9.85	11.91	10.95	13.93	13.65	130	21.6	23.0	35.2	34.9	42.7	57.9
1919	16.02	15.43	9.61	9.00	12.76	9.63	12.96	13.05	121	23.4	24.2	39.9	41.8	50.3	50.3
1920	12.86	8.52	8.38	6.76	11.80	8.51	11.85	9.41	119	24.3	22.8	42.3	39.3	54.3	39.1
1921	7.81	8.10	5.44	5.18	7.81	4.65	7.19	7.83	92	20.1	19.3	26.9	25.3	37.0	16.4
1922	8.32	7.34	5.43	5.55	7.68	5.96	9.76	10.30	84	18.4	18.2	23.9	24.7	35.3	29.8
1923	7.11	7.06	5.57	5.57	7.99	6.65	10.50	10.54	82	18.3	18.3	25.6	25.2	40.4	38.9
1924	7.46	10.46	5.59	5.88	8.12	6.81	10.75	11.45	76	18.8	19.2	25.2	26.1	39.4	36.9
1925	10.88	11.63	6.26	6.40	8.85	7.70	12.30	11.98	78	19.9	20.7	29.1	28.3	40.7	38.5
1926	11.75	----------	6.46	----------	9.61	7.43	11.56	----------	79	21.2	----------	27.9	----------	41.1	32.5

Division of Crop and Livestock Estimates.

TABLE 524.—*Index numbers of farm prices, 1910–1926*

[August, 1909–July, 1914=100]

Year	Grains	Fruits and vegetables	Meat animals	Dairy and poultry products	Cotton and cottonseed	Unclassified	All groups
1910	104	91	103	101	113	102	103
1911	96	106	87	95	101	103	95
1912	106	110	95	103	87	106	99
1913	92	92	108	100	97	94	100
1914	103	100	112	101	85	95	102
1915	120	83	104	99	78	95	100
1916	126	123	120	106	119	100	117
1917	217	202	173	133	187	130	176
1918	226	162	202	160	245	157	200
1919	231	189	206	182	247	162	209
1920	231	249	173	197	248	152	205
1921	112	148	108	151	101	90	116
1922	105	152	113	135	156	94	124
1923	114	136	106	147	216	109	135
1924	129	124	109	137	211	100	134
1925	156	160	139	143	177	92	147
1926 [1]	[1] 129	[1] 189	146	141	122	88	136
1924							
January	110	118	101	155	255	99	137
February	113	123	102	152	247	98	136
March	114	123	104	136	219	99	131
April	113	128	106	126	226	98	130
May	114	132	107	123	222	94	129
June	116	146	105	123	219	95	130
July	130	142	103	122	215	101	132
August	141	138	116	123	210	103	139
September	140	113	115	133	175	100	132
October	150	109	121	142	182	102	138
November	147	108	115	150	179	106	137
December	155	110	113	158	176	102	139
1925							
January	172	122	123	154	182	94	146
February	178	131	126	142	183	96	146
March	172	138	145	134	195	94	151
April	152	146	146	131	189	94	147
May	159	162	139	132	184	87	146
June	164	184	139	132	183	86	148
July	152	178	148	134	186	88	149
August	157	178	149	139	186	96	152
September	148	142	143	141	178	90	144
October	135	152	141	154	171	90	143
November	138	194	136	162	144	95	144
December	140	194	136	163	139	92	143
1926 [1]							
January	143	214	140	153	138	87	143
February	140	218	146	144	142	87	143
March	133	220	147	137	133	85	140
April	131	253	146	133	135	83	140
May	131	240	148	131	130	82	139
June	130	216	154	130	132	81	139
July	125	195	152	131	126	85	136
August	128	166	144	130	130	89	133
September	121	134	148	139	134	93	134
October	123	136	148	144	94	97	130
November	121	142	142	157	88	97	130
December	120	137	140	161	81	91	127

Division of Statistical and Historical Research. The commodities, by groups, are as follows: Grains—wheat, corn, oats, barley, rye, kafir; fruits and vegetables—apples, oranges, grapefruit, potatoes, sweet potatoes, beans, onions, cabbage; meat animals—beef cattle, calves, hogs, sheep, lambs; dairy and poultry products—chickens, eggs, butter (represents butter, butterfat, and cream), milk; cotton and cottonseed; unclassified—horses (represents horses and mules), hay, flax, tobacco, wool.

[1] Kafir, onions, and cabbage omitted.

TABLE 525.—*Index numbers of wholesale prices, by groups of commodities, United States, 1909–1926*

[Year 1913=100]

Year	Farm products	Foods	Cloths and clothing	Fuel and lighting	Metals and metal products	Building materials	Chemicals and drugs	House-furnishing goods	Miscellaneous	All commodities
1909	97	97	98	84	93	95	100	92	130	97
1910	103	101	100	78	94	98	102	96	151	101
1911	93	97	96	76	89	98	102	93	111	93
1912	101	104	97	84	99	99	101	94	110	99
1913	100	100	100	100	100	100	100	100	100	100
1914	103	102	98	93	85	92	101	100	95	98
1915	104	105	98	88	99	94	134	100	95	101
1916	123	121	127	126	162	120	181	106	121	127
1917	190	167	175	169	231	157	202	125	148	177
1918	218	188	228	170	187	172	215	153	156	194
1919	231	207	253	181	162	201	169	184	175	206
1920	218	220	295	241	192	264	200	[illegible]	196	226
1921	124	144	180	199	129	165	136	195	128	147
1922	133	138	181	218	122	168	124	176	117	149
1923	141	144	200	185	144	189	131	183	123	154
1924	143	144	191	170	134	175	130	173	117	150
1925	158	158	190	175	130	175	134	169	135	159
1926	142	153	176	180	127	173	131	162	124	151

Division of Crop and Livestock Estimates. Compiled from Bureau of Labor Statistics reports.

TABLE 526.—*Index numbers of wholesale prices of farm products, United States, 1909–1926*

[Year 1913=100]

Calendar year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1909	91	93	93	96	99	99	99	97	99	101	104	107	97
1910	106	106	108	105	103	102	104	105	103	101	97	97	103
1911	96	91	89	88	88	90	93	95	95	95	96	96	93
1912	96	97	99	103	105	101	101	103	104	104	103	101	101
1913	98	98	98	99	97	98	99	100	103	103	103	103	100
1914	103	103	102	102	101	101	103	106	106	101	102	101	103
1915	104	105	104	104	105	101	104	103	101	106	104	105	104
1916	110	110	111	113	115	114	117	125	131	136	147	146	123
1917	152	157	166	184	196	195	196	202	202	207	212	207	190
1918	211	211	211	213	209	210	217	227	234	225	225	227	218
1919	224	216	224	230	234	226	241	242	225	227	237	242	231
1920	247	237	237	243	241	237	233	218	210	187	173	152	218
1921	143	133	127	117	118	114	119	123	124	124	121	120	124
1922	122	131	130	129	132	131	135	131	133	138	143	145	183
1923	143	142	143	141	139	138	135	139	144	144	146	145	141
1924	144	143	137	139	136	134	141	145	143	149	150	157	143
1925	163	162	161	153	152	155	162	163	160	155	154	152	158
1926	152	150	144	145	144	144	141	138	141	139	135	136	142

Division of Crop and Livestock Estimates. Compiled from Bureau of Labor Statistics reports.

TABLE 527.—*Index numbers of wholesale prices of all commodities, United States, 1909–1926*

[Year 1913=100]

Calendar year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1909	93	93	94	95	97	97	97	98	99	101	102	103	97
1910	102	102	105	105	103	102	102	102	100	97	95	96	101
1911	95	92	93	91	90	90	92	94	95	95	95	94	93
1912	95	96	97	100	100	99	99	100	101	101	101	101	99
1913	100	100	100	100	99	99	100	100	102	101	100	99	100
1914	98	99	98	98	97	97	97	101	102	97	97	97	98
1915	98	99	99	99	100	99	100	100	100	102	104	108	101
1916	113	115	119	121	122	123	123	126	130	136	146	149	127
1917	153	157	162	173	183	185	188	189	187	183	183	182	177
1918	184	186	187	190	190	191	196	200	204	202	203	202	194
1919	199	193	196	199	202	203	212	216	210	211	217	223	206
1920	233	232	234	245	247	243	241	231	226	211	196	179	226
1921	170	160	155	148	145	142	141	142	141	142	141	140	147
1922	138	141	142	143	148	150	155	155	153	154	156	156	149
1923	156	157	159	159	156	153	151	150	154	153	152	151	154
1924	151	152	150	148	147	145	147	150	149	152	153	157	150
1925	160	161	161	156	155	157	160	160	160	158	158	156	159
1926	156	155	152	151	152	152	151	149	150	150	148	147	151

Division of Crop and Livestock Estimates. Compiled from Bureau of Labor Statistics reports.

TABLE 528.—*Index numbers of wholesale prices of agricultural commodities, United States, 1910–1926* [1]

[1910–1914=100]

Calendar year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1910	105	104	108	106	104	103	104	105	103	100	97	97	103
1911	96	92	90	88	89	90	92	96	97	98	98	96	94
1912	98	98	99	103	104	101	101	102	103	103	102	100	101
1913	97	97	98	99	97	98	100	101	103	102	102	100	99
1914	101	101	100	99	99	100	101	109	109	103	103	102	102
1915	104	107	105	106	107	103	105	103	100	104	103	105	104
1916	108	109	110	113	114	114	116	123	128	134	142	138	121
1917	143	148	156	174	187	184	184	191	192	196	199	197	179
1918	198	200	200	203	200	201	206	213	220	215	217	218	208
1919	216	209	217	224	227	219	227	228	216	216	223	231	221
1920	239	230	231	244	248	245	240	223	216	194	180	158	221
1921	151	142	141	132	129	126	130	133	133	130	127	125	133
1922	124	132	135	135	138	137	140	135	135	139	142	144	136
1923	141	142	144	144	142	141	138	139	146	147	146	146	143
1924	144	143	140	139	138	135	141	147	145	151	150	156	144
1925	161	159	162	155	154	157	161	162	162	156	155	153	158
1926	153	151	147	148	148	150	147	144	146	144	140	141	147

Division of Crop and Livestock Estimates. Compiled from Bureau of Labor Statistics reports.

[1] Commodities originating on United States farms. Includes (1) farm products group, excepting hides and skins; (2) the food group, excepting cocoa beans, coffee, copra, fish, pepper, salt, tea, and coconut oil; (3) bran, cottonseed meal, linseed meal, and mill-feed middlings.

TABLE 529.—*Index numbers of wholesale prices of nonagricultural commodities, United States, 1910–1926* [1]

[1910-1914=100]

Calendar year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1910	103	103	104	107	106	104	103	102	100	98	97	98	**102**
1911	97	97	99	97	96	94	94	95	95	94	94	94	**96**
1912	95	96	97	100	100	100	100	101	102	103	103	104	**100**
1913	107	107	106	106	105	104	104	104	104	104	103	101	**104**
1914	100	100	101	100	98	97	96	96	97	95	94	95	**97**
1915	96	96	96	96	97	98	100	101	103	105	109	115	**101**
1916	122	126	132	134	136	137	136	135	137	143	155	166	**138**
1917	170	173	176	179	185	195	199	196	189	175	173	174	**182**
1918	177	178	180	183	186	188	192	193	195	196	196	193	**188**
1919	188	184	181	179	183	194	204	211	213	215	219	224	**199**
1920	236	244	247	254	254	250	251	249	246	237	221	208	**241**
1921	196	185	177	171	168	164	159	156	156	159	161	161	**167**
1922	158	156	155	156	164	168	177	182	179	176	175	175	**168**
1923	177	178	179	180	176	172	169	167	167	165	163	162	**171**
1924	164	166	166	164	162	159	158	159	158	158	160	163	**162**
1925	165	167	165	162	161	163	164	164	163	164	166	165	**165**
1926	165	164	162	160	160	160	159	160	161	160	161	158	**161**

Division of Crop and Livestock Estimates. Compiled from Bureau of Labor Statistics reports.

[1] Commodities not originating on United States farms. Includes all commodities other than those in Table 528.

PRICES, COST OF LIVING, AND WAGES

TABLE 530.—*Index numbers of prices, cost of living, and wages, 1913–1926*

[1910-1914=100]

Calendar year	Farm prices, August, 1909–July, 1914=100 [1]	Wholesale prices all commodities [2]	Retail prices, 22 articles of food [2]	Cost of living (32 cities) 1913=100 [3]	Farm labor [1]	Union wages per hour May 15, 1913=100 [2]	Earnings New York State factory workers, June, 1914=100 [4]
1913	100	102	103	100	104	100	----------
1914	102	100	106	[5] 103	101	102	[6] **100**
1915	100	103	104	[5] 105	102	103	**101**
1916	117	129	117	[5] 118	112	107	**114**
1917	176	180	151	[5] 142	149	114	**129**
1918	200	198	174	[5] 174	176	133	**160**
1919	209	210	192	[5] 199	206	155	**185**
1920	205	230	210	[5] 200	239	199	**222**
1921	116	150	158	[5] 174	150	205	**203**
1922	124	152	146	[5] 170	146	193	**197**
1923	135	156	151	[5] 173	166	211	**214**
1924	131	152	150	[5] 172	166	228	**218**
1925	147	162	160	[5] 178	168	238	**223**
1926	136	154	166	[5] 176	171	250	**229**
1926							
January	143	159	169	----------	159	----------	**220**
February	143	158	166	----------	----------	----------	**225**
March	140	154	165	----------	----------	----------	**229**
April	140	151	167	----------	166	----------	**227**
May	139	154	166	----------	----------	----------	**226**
June	139	155	165	175	----------	----------	**228**
July	136	153	162	----------	174	----------	**227**
August	133	152	161	----------	----------	----------	**227**
September	134	153	163	----------	----------	----------	**231**
October	130	152	165	----------	176	----------	**231**
November	130	151	167	----------	----------	----------	**230**
December	127	150	167	176	----------	----------	**232**

Division of Statistical and Historical Research.

[1] Bureau of Agricultural Economics.
[2] Bureau of Labor Statistics.
[3] Bureau of Labor Statistics. Food (22 items prior to 1921; 43 from January, 1921); heat and light (5 items); clothing (about 75 items varying from time to time); rent (representative number of moderate-priced houses); furniture and household articles (28 items); and 42 miscellaneous articles.
[4] New York State Department of Labor.
[5] December.
[6] June.

TABLE 531.—*Average expenditure per family, and per family purchasing, for the various articles of household furnishings and equipment purchased during one year by 1,299 farm families of selected localities of Ohio, Kentucky, Missouri, and Kansas. Owners and tenants, 1922–23*

Kind of furnishings or equipment	Families purchasing		Average expenditure	
			Per family purchasing	Per family
	Number	*Per cent*	*Dollars*	*Dollars*
Canning equipment	487	37.5	3.80	1.40
Cleaning equipment:				
Brooms	1,111	85.5	2.70	2.30
Brushes	216	16.6	2.20	.40
Vacuum cleaners	34	2.6	15.70	.40
Furnishings:				
Bedding	456	35.1	10.70	3.80
Curtains and portieres	410	31.6	6.40	2.00
Furniture	195	15.0	39.90	6.00
Floor covering—				
Carpets	29	2.2	13.80	.30
Linoleum	124	9.5	16.60	1.60
Rugs	199	15.3	30.90	4.70
Not specified	25	1.9	17.60	.30
Household linens	503	38.7	5.40	2.10
Lamps	146	11.2	9.40	1.00
Musical instruments	63	4.8	65.50	3.20
Pictures and ornaments	53	4.1	10.10	.40
Tableware	345	26.6	5.60	1.50
Window shades	229	17.6	4.30	.80
Kitchen utensils	481	37.0	4.70	1.80
Laundry equipment:				
Ironing boards	16	1.2	3.30	.04
Irons	25	1.9	4.30	.10
Tubs	16	1.2	1.30	.02
Washing machines	73	5.6	36.30	2.00
Wringers	26	2.0	4.40	.10
Not specified	18	1.4	4.10	.10
Sewing equipment:				
Cutting table	3	.2	17.70	.01
Dress form	22	1.7	1.20	.02
Sewing machine	33	2.5	31.50	.80
Miscellaneous:				
Electric appliances	44	3.4	24.20	.80
Gas engines (portable)	13	1.0	40.30	.40
Stoves	167	12.9	42.30	5.40
Trunks and suit cases	60	4.6	8.60	.40
Other (including refrigerator)	45	3.5	5.80	.20
Sum of average expenditure per family				44.42

Division of Farm Population and Rural Life.

TABLE 532.—*The average value of goods used during one year and the distribution of this value among the principal groups of goods furnished by the farm and purchased, 2,886 farm families of selected localities of 11 States, 1922–1924*

Tenure groups and States	Families studied	Size of—		All goods used			House rent furnished by farm	Food			Operation goods				Furniture and furnishings	Clothing	Maintenance of health	Advancement	Personal goods	Insurance, life and health	Unclassified
												Fuel									
		Family	Household	Total	Furnished by farm	Purchased		Total	Furnished by farm	Purchased	Total	Total	Furnished by farm	Purchased							
	Number	*Persons*	*Persons*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Owners, tenants, and hired men: All States	2,886	4.4	4.8	1,597.50	683.70	913.80	199.60	658.80	440.70	218.10	213.10	85.20	43.20	42.00	40.20	234.90	61.60	104.80	41.00	40.80	2.70
New England States	317	4.0	4.7	1,692.20	656.40	1,035.80	204.10	707.30	350.10	357.20	255.30	139.20	100.70	38.50	35.80	221.00	61.30	117.90	50.90	35.70	2.90
New Hampshire	40	3.2	4.2	1,838.80	630.20	1,208.60	211.90	716.80	335.40	381.40	286.20	119.10	79.40	39.70	48.60	243.70	49.40	183.40	63.00	31.80	3.40
Vermont	86	4.3	5.0	1,553.20	695.40	857.80	188.20	679.90	400.00	279.90	253.50	126.60	104.40	22.20	21.50	178.30	59.60	85.50	44.20	36.90	5.60
Massachusetts	81	3.8	4.6	1,948.10	704.30	1,243.80	222.50	768.70	368.20	400.50	299.30	174.10	113.30	60.80	56.70	245.90	80.10	169.70	60.30	42.20	2.70
Connecticut	110	4.3	4.7	1,559.20	600.20	959.00	200.10	680.20	303.30	376.90	212.90	131.50	98.90	32.60	27.10	227.80	53.20	81.20	44.70	31.40	.60
Southern States	1,130	4.7	5.1	1,551.00	707.00	844.00	156.20	691.10	514.70	176.40	193.80	66.40	36.10	30.30	36.10	241.70	48.50	104.30	37.40	38.50	3.40
Kentucky	370	4.1	4.6	1,492.60	650.10	842.50	212.10	593.40	421.60	171.80	222.10	82.10	16.00	66.10	31.10	222.90	51.10	83.30	32.30	32.50	6.50
South Carolina	202	5.2	5.6	1,481.80	698.50	783.30	138.30	673.10	503.70	169.40	186.10	66.60	56.50	10.10	25.00	233.40	46.00	98.20	33.20	43.80	4.70
Alabama	558	4.9	5.3	1,614.80	747.80	867.00	125.30	762.40	580.40	182.00	177.90	56.00	42.10	13.90	43.50	257.20	47.60	117.10	42.20	40.70	.90
North Central States	1,439	4.3	4.6	1,613.20	671.40	941.80	232.80	622.60	402.50	220.10	219.00	88.00	36.10	51.90	44.30	232.50	72.10	102.30	41.80	43.70	2.10
Missouri	178	4.0	4.4	1,896.80	834.20	1,062.60	256.20	724.00	528.00	196.00	247.90	97.40	48.50	48.90	64.10	267.60	80.00	137.40	65.00	54.50	.10
Kansas	406	4.4	4.7	1,492.00	604.90	887.10	174.10	629.40	404.20	225.20	184.90	64.90	26.60	38.30	41.40	200.90	68.90	105.40	43.60	37.90	5.50
Iowa	472	4.4	4.8	1,669.20	692.80	976.40	256.20	621.70	399.90	221.80	235.60	93.10	36.70	56.40	35.00	242.50	85.20	107.90	26.60	58.20	.30
Ohio	383	4.1	4.3	1,540.80	639.80	901.00	255.30	569.60	345.70	223.90	221.10	101.10	38.80	62.30	49.60	237.50	55.60	75.70	47.90	26.70	1.80
Owners: All States	1,950	4.4	4.8	1,717.30	727.70	989.60	219.90	686.10	461.00	225.10	231.10	90.50	46.60	43.90	43.20	254.20	62.80	127.70	44.70	44.50	3.10
New England States	277	4.0	4.7	1,735.90	671.80	1,064.10	208.60	719.50	359.90	359.60	261.50	142.10	101.80	40.30	38.10	229.20	61.40	127.00	50.60	36.90	3.10
Southern States	792	4.6	5.1	1,713.00	762.70	950.30	179.50	728.00	545.10	182.90	220.60	70.50	38.10	32.40	41.40	267.00	51.10	132.40	42.10	47.20	3.70
North Central States	881	4.3	4.6	1,715.30	713.80	1,001.50	259.70	637.90	417.10	220.80	231.00	92.30	37.00	55.30	46.40	250.50	73.80	123.70	45.20	44.40	2.70
Tenants: All States	867	4.5	4.9	1,356.70	598.30	758.40	159.40	606.20	403.30	202.90	177.40	74.00	35.60	38.40	32.20	197.30	57.80	57.90	33.50	33.10	1.90
New England States	40	3.7	4.5	1,389.70	549.90	839.80	172.20	623.30	282.50	340.80	212.00	118.40	92.50	25.90	19.90	164.40	61.00	54.20	53.30	27.40	1.90
Southern States	320	5.0	5.3	1,176.60	580.80	595.80	103.00	607.60	447.00	160.60	131.70	56.30	30.80	25.50	23.50	184.20	41.60	38.10	26.10	17.90	2.90
North Central States	507	4.2	4.6	1,467.90	613.20	854.70	193.90	604.00	385.30	218.70	203.60	81.70	34.20	47.50	38.70	208.20	67.80	70.60	36.60	43.20	1.30
Hired men: All States	69	4.4	4.7	1,237.50	512.50	725.00	133.00	546.90	338.20	208.70	153.00	73.20	41.30	31.90	54.10	161.10	77.60	45.70	33.00	32.70	.40

Division of Farm Population and Rural Life. (From Department Bulletin 1466, The Farmers Standard of Living.)

Table 533.—*Distribution of average value of goods among different groups of articles, proportions of total family living and of food furnished by farm and size of house, by steps of increase in total value of goods used during one year, 2,886 farm families of selected localities in 11 States, 1922–1924, owners, tenants, and hired men*

	Groups of total value of goods used										
	Below $600	$600–$899	$900–$1,199	$1,200–$1,499	$1,500–$1,799	$1,800–$2,099	$2,100–$2,399	$2,400–$2,699	$2,700–$2,999	$3,000 and over	All value groups
Number of families	58	280	579	614	492	332	196	116	83	136	2,886
Average size of family ... persons	3.0	3.4	3.7	4.1	4.8	4.8	5.3	5.4	5.7	6.2	4.4
Average size of household ... do	3.3	3.6	4.0	4.5	5.1	5.3	5.9	6.0	6.5	7.0	4.8
Average value of all goods ... dollars	486.10	778.60	1,055.00	1,338.80	1,639.30	1,932.40	2,240.10	2,529.40	2,854.00	3,778.60	1,597.50
Proportion of total for food ... per cent	54.4	52.1	47.6	45.3	43.0	39.8	37.2	36.2	33.6	30.7	41.2
Clothing ... do	11.6	11.9	12.6	13.8	15.1	15.4	15.8	15.5	16.0	16.4	14.7
Rent ... do	12.5	11.6	13.0	12.7	12.2	13.5	12.6	12.3	13.1	10.9	12.5
Furniture and furnishings ... do	1.5	1.6	2.1	2.3	2.9	2.5	2.8	2.8	2.8	2.9	2.5
Operation goods ... do	13.2	14.1	14.2	13.6	12.9	13.3	13.5	13.6	12.4	12.5	13.3
Maintenance of health ... do	2.1	2.6	3.0	3.5	3.4	3.9	4.6	3.8	6.7	4.8	3.8
Advancement ... do	1.9	2.7	3.6	4.4	5.5	6.3	7.5	9.8	9.7	13.4	6.6
Personal ... do	2.3	2.1	2.3	2.4	2.3	2.5	2.6	2.5	2.7	3.8	2.6
Insurance, life and health ... do	.5	1.2	1.6	1.8	2.6	2.5	3.1	3.3	2.9	4.5	2.6
Unclassified ... do	.0	.1	.0	.2	.1	.3	.3	.2	.1	.1	.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Proportion of living furnished ... per cent	55.6	52.9	48.9	46.3	44.0	42.1	39.5	38.2	38.1	31.7	42.8
Proportion of living purchased ... do	44.4	47.1	51.1	53.7	56.0	57.9	60.5	61.8	61.9	68.3	57.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Proportion of food furnished ... per cent	69.0	70.6	67.9	67.5	67.5	66.0	65.5	64.7	67.8	63.2	66.9
Proportion of food purchased ... do	31.0	29.4	32.1	32.5	32.5	34.0	34.5	35.3	32.2	36.8	33.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Size of house, rooms per household ... number	4.4	5.4	6.2	6.6	7.0	7.5	7.9	8.2	8.2	8.6	6.8
Size of house, rooms per person ... do	1.3	1.5	1.5	1.5	1.4	1.4	1.3	1.4	1.3	1.2	1.4

Division of Farm Population and Rural Life. (From Department Bulletin 1466. The Farmer's Standard of Living.)

TABLE 534.—*Average prevailing farm wage rates, by geographic divisions* [1]

Basis of rate, year, and month	North Atlantic States	North Central States	South Atlantic States	South Central States	Western States	United States
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Per month with board:						
1910	21.47	24.11	13.76	15.56	32.41	19.58
1915	23.85	26.23	14.70	16.13	33.51	21.08
1920	52.37	56.44	34.88	36.60	73.36	47.24
1921	38.36	35.53	21.64	22.75	47.75	30.25
1922	37.57	33.73	21.36	22.35	46.22	29.31
1923	43.52	38.63	24.39	24.55	51.02	33.09
Oct. 1, 1922	37.41	34.49	20.53	21.48	45.61	29.03
Jan. 1, 1923	36.85	31.61	20.23	21.48	43.55	27.87
Apr. 1, 1923	41.77	37.04	22.07	22.52	46.43	30.90
July 1, 1923	49.06	40.97	21.14	24.49	56.11	34.64
Oct. 1, 1923	47.55	40.14	24.68	25.26	54.66	34.56
Jan. 1, 1924	42.51	35.51	24.09	23.78	48.77	31.55
Apr 1, 1924	45.35	39.68	25.04	24.52	49.66	33.57
July 1, 1924	46.04	39.71	26.28	25.85	50.00	34.34
Oct. 1, 1924	45.50	40.04	25.46	26.24	50.40	34.38
Jan. 1, 1925	41.38	34.20	24.89	24.01	46.64	31.07
Apr. 1, 1925	45.03	40.18	25.30	24.79	49.85	33.86
July 1, 1925	46.35	40.72	26.38	25.75	52.92	34.94
Oct. 1, 1925	45.29	40.80	26.20	26.32	52.02	34.91
Jan. 1, 1926	43.20	35.23	25.17	24.27	48.05	31.82
Apr. 1, 1926	46.20	40.61	26.16	24.84	51.00	34.38
July 1, 1926	48.16	42.79	26.79	26.07	54.96	36.10
Oct. 1, 1926	47.75	41.91	26.76	27.11	53.61	36.00
Jan. 1, 1927	44.42	37.12	25.55	24.72	50.36	32.94
Per month, without board:						
1910	32.95	33.82	19.77	22.27	46.03	28.04
1915	35.66	36.25	21.06	23.06	48.37	29.97
1920	76.18	75.50	47.37	52.07	99.81	65.05
1921	57.92	49.77	31.31	33.21	68.82	43.58
1922	56.51	47.31	30.71	32.16	66.98	42.09
1923	63.54	53.23	34.75	35.06	72.24	46.74
Oct. 1, 1922	55.41	48.29	30.00	30.99	67.21	41.79
Jan. 1, 1923	54.74	45.27	29.62	31.06	64.19	40.50
Apr. 1, 1923	61.32	51.34	32.32	32.97	67.46	44.41
July 1, 1923	70.63	56.37	34.12	34.91	78.08	48.61
Oct. 1, 1923	67.00	55.06	34.72	36.38	76.45	48.42
Jan. 1, 1924	63.66	50.10	34.52	34.75	70.83	45.53
Apr. 1, 1924	66.91	53.69	35.21	35.43	71.99	47.38
July 1, 1924	66.64	53.39	36.56	37.04	71.83	48.02
Oct. 1, 1924	66.36	54.60	37.08	37.05	71.91	48.46
Jan. 1, 1925	62.42	48.26	35.37	35.25	69.29	45.04
Apr. 1, 1925	66.30	53.48	36.03	35.55	71.42	47.40
July 1, 1925	67.34	54.30	37.41	36.56	73.74	48.55
Oct. 1, 1925	66.88	55.10	36.84	37.25	75.19	48.99
Jan. 1, 1926	65.09	50.54	36.32	35.16	70.63	46.26
Apr. 1, 1926	68.46	54.48	36.78	36.20	72.90	48.40
July 1, 1926	69.16	56.04	37.86	37.19	77.43	49.80
Oct. 1, 1926	68.67	56.12	37.58	38.15	77.31	50.10
Jan. 1, 1927	67.30	52.18	35.66	35.09	73.27	47.07
Per day, with board:						
Oct. 1, 1922	2.16	1.96	1.04	1.07	2.32	1.56
Jan. 1, 1923	2.14	1.75	1.02	1.05	2.10	1.46
Apr. 1, 1923	2.28	1.88	1.10	1.10	2.20	1.55
July 1, 1923	2.80	2.25	1.28	1.27	2.67	1.84
Oct. 1, 1923	2.96	2.56	1.36	1.39	2.81	2.02
Jan. 1, 1924	2.60	2.20	1.26	1.26	2.47	1.79
Apr 1, 1924	2.64	2.17	1.30	1.25	2.31	1.77
July 1, 1924	2.69	2.24	1.38	1.41	2.33	1.87
Oct. 1, 1924	2.80	2.44	1.36	1.39	2.40	1.93
Jan. 1, 1925	2.50	2.04	1.41	1.29	2.23	1.74
Apr. 1, 1925	2.63	2.16	1.35	1.26	2.22	1.77
July 1, 1925	2.73	2.27	1.41	1.38	2.49	1.89
Oct. 1, 1925	2.78	2.45	1.42	1.40	2.49	1.95
Jan. 1, 1926	2.59	2.08	1.37	1.28	2.33	1.76
Apr. 1, 1926	2.63	2.15	1.35	1.27	2.32	1.78
July 1, 1926	2.72	2.35	1.38	1.38	2.53	1.91
Oct. 1, 1926	2.82	2.41	1.42	1.46	2.51	1.97
Jan. 1, 1927	2.65	2.15	1.35	1.29	2.32	1.79
Per day, without board:						
Oct. 1, 1922	2.88	2.58	1.40	1.46	3.03	2.07
Jan. 1, 1923	2.84	2.37	1.36	1.43	2.84	1.97
Apr. 1, 1923	3.06	2.53	1.47	1.49	2.93	2.09
July 1, 1923	3.65	3.00	1.70	1.68	3.52	2.44
Oct. 1, 1923	3.79	3.27	1.72	1.77	3.58	2.58

[1] Yearly averages are from reports by crop reporters, giving average wages for the year in their localities.

TABLE 534.—*Average prevailing farm wage rates, by geographic divisions* —Contd.

Basis of rate, year, and month	North Atlantic States	North Central States	South Atlantic States	South Central States	Western States	United States
Per day without board—Continued.	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Jan. 1, 1924	3.47	2.91	1.70	1.67	3.31	2.38
Apr. 1, 1924	3.48	2.88	1.71	1.63	3.13	2.34
July 1, 1924	3.51	2.94	1.77	1.80	3.16	2.43
Oct. 1, 1924	3.57	3.12	1.77	1.85	3.25	2.51
Jan. 1, 1925	3.24	2.75	1.80	1.69	3.02	2.31
Apr. 1, 1925	3.43	2.83	1.76	1.64	3.05	2.33
July 1, 1925	3.54	2.97	1.84	1.71	3.25	2.44
Oct. 1, 1925	3.58	3.14	1.84	1.83	3.33	2.53
Jan. 1, 1926	3.42	2.80	1.78	1.64	3.14	2.33
Apr. 1, 1926	3.45	2.84	1.76	1.67	3.17	2.35
July 1, 1926	3.52	3.04	1.80	1.78	3.35	2.48
Oct. 1, 1926	3.62	3.08	1.86	1.91	3.37	2.55
Jan. 1, 1927	3.41	2.84	1.77	1.69	3.18	2.36

Division of Crop and Livestock Estimates.

TABLE 535.—*Farm wage rates and index numbers, 1866–1926*

[1910-1914=100]

Year	Average yearly farm wage [1]: Per month—With board	Per month—Without board	Per day—With board	Per day—Without board	Weighted average wage rate per month [2]	Index numbers of farm wages
	Dols.	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*
1866 [3]	10.09	15.50	0.64	0.90	13.14	55
1869	9.97	15.50	.63	.87	12.93	54
1874 or 1875	11.16	17.10	.08	.94	14.19	59
1877 or 1879 [4]	10.86	16.79	.61	.84	13.34	56
1879 or 1880	11.70	17.53	.64	.89	14.14	59
1880 or 1881	12.32	18.52	.67	.92	14.82	62
1881 or 1882	12.88	19.11	.70	.97	15.48	65
1884 or 1885	13.08	19.22	.71	.96	15.58	65
1887 or 1888	13.29	19.67	.72	.98	15.87	66
1889 or 1890	13.29	19.45	.72	.97	15.79	66
1891 or 1892	13.48	20.02	.73	.98	16.06	67
1893	13.85	19.97	.72	.92	15.93	67
1894	12.70	18.57	.65	.84	14.00	61
1895	12.75	18.74	.65	.85	14.69	62
1898	13.29	19.16	.71	.94	15.58	65
1899	13.90	19.97	.75	.99	16.34	68
1902	15.51	22.12	.83	1.09	18.12	76
1906	18.73	26.19	1.03	1.32	21.92	92
1909	20.48	28.09	1.04	1.31	23.00	96
1910	19.58	28.04	1.07	1.40	23.08	97
1911	19.85	28.33	1.07	1.40	23.25	97
1912	20.46	29.14	1.12	1.44	24.01	101
1913	21.27	30.21	1.15	1.48	24.83	104
1914	20.90	29.72	1.11	1.44	24.26	101
1915	21.08	29.97	1.12	1.45	24.46	102
1916	23.04	32.58	1.24	1.60	26.83	112
1917	28.64	40.19	1.56	2.00	33.42	140
1918	35.12	49.13	2.05	2.61	42.12	176
1919	40.14	56.77	2.44	3.10	49.11	206
1920	47.24	65.05	2.84	3.56	57.01	239
1921	30.25	43.58	1.65	2.17	35.77	150
1922	29.31	42.09	1.64	2.14	31.91	146
1923	33.09	46.74	1.91	2.45	39.64	166
1924 [5]	33.31	47.22	1.88	2.41	39.67	166
1925 [5]	33.88	47.80	1.89	2.46	40.12	168
1926 [5]	34.86	48.86	1.91	2.49	40.92	171
1923—January	27.87	40.50	1.46	1.97	32.61	137
April	30.90	44.41	1.55	2.09	35.42	148
July	34.64	48.61	1.84	2.44	40.30	169
October	34.56	48.42	2.02	2.58	41.52	174
1924—January	31.55	15.53	1.79	2.38	38.01	159
April	33.57	47.38	1.77	2.34	38.95	163
July	34.34	48.02	1.87	2.43	40.15	168
October	34.38	48.46	1.93	2.51	40.81	171
1925—January	31.07	45.04	1.74	2.31	37.24	156
April	33.86	47.40	1.77	2.33	39.04	163
July	34.94	48.55	1.89	2.44	40.62	170
October	34.91	48.99	1.95	2.53	41.28	173
1926—January	31.82	16.26	1.76	2.33	37.94	159
April	34.38	48.40	1.78	2.35	39.56	166
July	36.10	49.89	1.91	2.48	41.59	174
October	36.00	50.10	1.97	2.55	42.10	176
1927—January	32.94	47.07	1.79	2.36	38.79	162

Division of Crop and Livestock Estimates.

[1] Yearly averages are from reports by crop reporters, giving average wages for the year in their localities.
[2] This column has significance only as an essential step in computing the wage index.
[3] Years 1866 to 1878 in gold.
[4] 1877 or 1878, 1878 or 1879 (combined).
[5] Weighted average quarterly, April (weight 1), July (weight 5), October (weight 5), and January, 1925 (weight 1).

TABLE 536.—*Wages; Male farm labor, by States, quarterly, 1926*

State and division	Per month, with board				Per month, without board				Per day, with board [1]				Per day, without board [1]			
	Jan.	Apr.	July	Oct.	Jan.	Apr.	July	Oct.	Jan.	Apr.	July	Oct.	Jan.	Apr.	July	Oct.
	Dols.	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*	*Dols.*
Maine	42.00	42.00	46.00	45.00	63.00	64.00	63.00	64.00	2.60	2.30	2.20	2.60	2.90	3.00	3.00	3.25
New Hampshire	44.00	43.00	48.00	50.00	71.50	67.00	75.00	76.00	2.45	2.45	2.60	2.50	3.30	3.40	3.40	3.30
Vermont	40.50	47.00	46.00	46.00	61.00	68.00	66.00	65.00	2.35	2.35	2.45	2.60	3.10	3.20	3.15	3.20
Massachusetts	46.50	52.00	56.00	52.00	74.50	83.00	81.00	79.00	2.60	2.85	2.55	2.75	[illegible]	3.70	3.60	3.80
Rhode Island	52.50	54.00	59.00	51.00	81.00	84.00	90.00	78.00	2.90	2.80	2.90	2.80	3.55	4.00	3.80	3.60
Connecticut	52.50	51.00	54.00	54.00	80.00	80.00	80.00	80.00	2.45	2.65	2.55	2.85	3.00	3.70	3.50	3.80
New York	44.25	49.25	51.25	50.50	64.50	69.75	70.75	70.25	2.70	2.85	3.00	3.10	3.60	3.65	3.80	3.90
New Jersey	47.00	49.00	52.00	54.00	72.00	73.00	78.00	77.00	2.65	2.60	2.80	2.90	3.45	3.40	3.60	3.75
Pennsylvania	38.50	40.00	40.50	41.75	58.50	60.25	60.00	60.00	2.50	2.45	2.60	2.60	3.25	3.25	3.30	3.35
North Atlantic	43.20	46.20	48.16	47.75	65.09	68.46	69.16	68.67	2.59	2.63	2.72	2.82	3.42	3.45	3.52	3.62
Ohio	37.00	38.00	40.00	39.00	52.00	53.00	54.00	55.00	2.30	2.30	2.45	2.55	3.10	3.00	3.15	3.25
Indiana	34.00	36.00	37.00	37.00	47.00	50.50	50.00	50.00	2.00	2.00	2.15	2.25	2.65	2.65	2.75	2.85
Illinois	39.50	42.00	45.00	42.00	52.50	54.00	56.00	55.00	2.20	2.15	2.35	2.35	2.85	2.75	3.00	3.05
Michigan	37.00	41.00	43.50	43.50	54.00	57.25	59.75	61.50	2.40	2.50	2.70	2.75	3.10	3.35	3.40	3.50
Wisconsin	38.00	45.75	49.00	48.50	58.00	62.00	64.25	66.00	2.10	2.25	2.45	2.45	2.80	2.95	3.15	3.15
Minnesota	32.50	43.00	46.50	46.75	49.75	58.00	61.48	62.00	2.05	2.20	2.45	2.80	2.85	3.00	3.10	3.40
Iowa	37.00	47.25	47.50	46.25	51.00	58.00	58.50	56.75	2.15	2.40	2.45	2.50	2.80	2.95	3.10	3.10
Missouri	30.00	33.00	34.00	34.00	42.00	44.00	44.00	44.00	1.60	1.60	1.70	1.70	2.20	2.15	2.20	2.20
North Dakota	27.25	40.75	48.00	49.50	46.25	55.00	65.00	69.50	1.70	2.00	2.25	3.35	2.75	2.85	3.25	4.20
South Dakota	33.75	46.75	48.00	43.75	52.25	62.50	62.00	60.00	2.15	2.35	2.50	2.45	3.10	3.25	3.20	3.25
Nebraska	37.75	41.50	42.50	40.00	53.75	56.25	56.50	53.50	2.30	2.25	2.45	2.25	3.05	3.00	3.20	3.00
Kansas	33.50	35.00	37.00	37.00	48.50	50.00	51.00	51.00	2.00	2.00	2.65	2.20	2.70	2.70	3.75	2.90
North Central	35.23	40.61	42.79	41.91	50.54	54.48	56.04	56.12	2.08	2.15	2.35	2.41	2.80	2.84	3.04	3.08
Delaware	32.50	34.00	35.00	35.00	50.50	49.00	50.00	48.00	2.35	2.15	2.20	2.50	2.90	2.75	2.70	3.10
Maryland	34.25	36.50	36.00	35.75	51.00	51.50	53.00	51.00	2.05	1.95	2.15	2.25	2.85	2.65	2.80	2.95
Virginia	28.50	29.00	29.00	30.00	40.50	40.00	41.00	43.00	1.55	1.50	1.55	1.65	2.05	2.00	2.05	2.15
West Virginia	32.25	34.25	36.00	34.75	48.75	48.50	50.75	49.50	1.75	1.70	1.80	1.80	2.40	2.35	2.45	2.50
North Carolina	28.00	29.00	29.00	30.00	40.00	40.00	41.00	41.00	1.50	1.50	1.50	1.50	1.90	1.90	1.90	1.90
South Carolina	20.00	20.25	22.50	21.00	28.00	29.00	29.50	29.50	1.05	1.05	1.10	1.05	1.30	1.30	1.35	1.40
Georgia	19.50	20.50	21.50	21.50	27.75	28.75	31.00	29.50	1.05	1.05	1.05	1.10	1.35	1.35	1.40	1.45
Florida	28.50	30.50	28.75	28.00	44.00	45.50	42.25	42.50	1.45	1.45	1.45	1.50	2.05	2.05	2.00	2.00
South Atlantic	25.17	26.16	26.79	26.76	36.32	36.78	37.86	37.58	1.37	1.35	1.38	1.42	1.78	1.76	1.80	1.86
Kentucky	25.75	26.25	27.75	28.50	37.50	37.75	38.50	39.75	1.30	1.35	1.35	1.60	1.65	1.75	1.80	2.05
Tennessee	24.25	24.25	24.75	24.75	32.70	32.75	34.20	33.00	1.15	1.15	1.20	1.20	1.45	1.50	1.65	1.60
Alabama	21.25	22.00	22.00	22.50	30.50	32.00	31.00	31.50	1.10	1.15	1.15	1.25	1.30	1.50	1.50	1.60
Mississippi	22.00	22.25	23.50	23.75	31.00	32.00	33.50	33.70	1.20	1.20	1.20	1.25	1.55	1.55	1.55	1.65
Arkansas	24.25	24.50	25.50	30.00	34.75	35.25	35.00	37.50	1.15	1.20	1.20	1.25	1.55	1.60	1.60	1.70
Louisiana	23.00	23.00	23.50	24.00	35.00	35.75	36.75	36.00	1.30	1.25	1.25	1.35	1.70	1.60	1.60	1.80
Oklahoma	27.50	27.50	30.00	31.50	40.25	41.25	43.00	45.00	1.60	1.50	1.95	1.85	2.10	2.00	2.40	2.50
Texas	25.50	27.00	29.00	30.00	38.00	40.00	42.00	44.00	1.40	1.35	1.60	1.70	1.80	1.80	2.00	2.20
South Central	24.27	24.84	26.07	27.14	35.16	36.20	37.19	38.15	1.28	1.27	1.38	1.46	1.64	1.67	1.78	1.91
Montana	42.75	51.00	54.25	52.50	64.25	72.00	71.25	75.00	2.50	2.45	2.85	3.20	3.30	3.30	3.50	3.85
Idaho	44.75	54.00	56.00	56.00	62.00	75.00	76.00	77.00	2.40	2.50	2.70	2.85	3.10	3.30	3.50	3.65
Wyoming	42.00	45.00	49.00	49.00	62.00	68.00	68.00	70.00	2.20	2.15	2.40	2.50	3.15	3.00	3.25	3.40
Colorado	36.75	39.00	41.25	41.30	54.45	58.50	62.50	63.80	2.15	2.05	2.30	2.40	2.95	2.75	3.10	3.20
New Mexico	32.00	33.50	35.00	34.00	47.50	51.25	51.00	50.00	1.55	1.55	1.60	1.70	2.10	2.05	2.10	2.20
Arizona	49.00	48.00	51.00	45.00	71.00	68.00	72.00	65.00	1.55	1.60	2.15	1.75	2.50	2.50	2.65	2.50
Utah	51.50	54.25	57.50	54.50	70.75	74.25	77.50	75.00	2.30	2.35	2.60	2.40	3.10	3.00	3.25	3.10
Nevada	54.00	57.25	62.00	59.25	73.00	76.00	80.00	81.50	2.10	2.40	2.90	2.55	3.10	3.05	3.55	2.95
Washington	42.75	51.25	56.50	51.00	70.50	72.75	76.00	75.00	2.50	2.65	2.75	2.90	3.40	3.50	3.65	3.60
Oregon	42.25	47.50	52.75	51.00	60.50	62.00	75.50	76.00	2.20	2.30	2.60	2.50	2.70	3.00	3.35	3.25
California	58.00	58.00	63.00	63.00	85.00	84.00	90.00	90.00	2.60	2.50	2.65	2.55	3.50	3.50	3.65	3.65
Far Western	48.05	51.00	54.96	53.61	70.63	72.90	77.43	77.31	2.33	2.32	2.53	2.51	3.14	3.17	3.35	3.37
United States	31.82	34.38	36.10	36.00	46.26	48.40	49.89	50.10	1.76	1.78	1.91	1.97	2.33	2.35	2.48	2.55

Division of Crop and Livestock Estimates.

[1] Includes piecework.

TABLE 537.—*Farm labor: Supply and demand, 1918–1926*

Division	Farm labor supply, per cent of normal								
	1918	1919	1920	1921	1922	1923	1924	1925	1926
North Atlantic	62.9	84.2	62.4	92.0	99.3	73.5	79.9	87.0	88.0
North Central	74.5	86.2	73.4	96.0	101.4	83.1	85.9	92.8	93.1
South Atlantic	73.8	81.9	72.8	94.4	97.3	82.5	77.1	83.0	81.1
South Central	74.2	83.2	72.7	94.7	97.5	87.3	83.8	89.5	88.3
Far Western	76.9	90.4	82.4	102.6	107.4	92.0	97.4	100.0	98.3
United States	73.4	84.6	72.9	95.5	99.7	84.2	84.1	90.0	89.2

Division	Farm labor demand, per cent of normal								
	1918	1919	1920	1921	1922	1923	1924	1925	1926
North Atlantic	98.8	101.1	107.4	92.8	94.8	95.3	90.2	88.8	90.2
North Central	99.6	101.2	105.2	90.3	90.2	95.6	89.5	92.1	91.9
South Atlantic	104.5	103.9	107.6	86.2	88.0	94.1	92.5	91.1	89.6
South Central	102.7	100.8	103.8	83.0	85.9	90.6	91.2	89.4	90.7
Far Western	99.6	102.6	102.8	88.6	89.8	94.0	88.5	89.0	92.7
United States	101.4	101.7	105.2	87.3	88.8	93.6	90.6	90.4	91.0

Division	Supply as a percentage of demand								
	1918	1919	1920	1921	1922	1923	1924	1925	1926
North Atlantic	63.6	83.3	58.1	99.1	104.7	77.1	88.6	97.9	97.5
North Central	74.8	85.2	69.8	106.3	112.3	87.0	95.9	100.7	101.2
South Atlantic	70.6	78.8	67.7	109.5	110.6	87.7	83.4	91.2	90.5
South Central	72.2	82.5	70.0	114.1	113.5	93.0	91.9	100.1	97.4
Far Western	77.3	88.1	80.1	115.8	119.6	97.9	110.0	112.4	106.1
United States	72.3	83.2	69.3	109.4	112.3	90.0	92.8	99.5	98.1

Division of Crop and Livestock Estimates. Based upon reports of crop reporters of April 1

TABLE 538.—*Per cent that number of persons engaged in agricultural pursuits are of the number of persons engaged in all gainful occupations, by decades, 1820–1920*

Date	Percentage engaged in agriculture	Date	Percentage engaged in agriculture	Date	Percentage engaged in agriculture	Date	Percentage engaged in agriculture
1820	83.1	1870	47.5	1890	39.2	1910	33.2
1840	77.5	1880	44.3	1900	35.7	1920	26.3

Census Reports.

TABLE 539.—*Farm population: 1925 census of agriculture*

Division and State	All farm population					White farm population					Colored farm population				
	Total	Under 10 years of age	10 years of age and over			Total	Under 10 years of age	10 years of age and over			Total	Under 10 years of age	10 years of age and over		
			Total	Male	Female			Total	Male	Female			Total	Male	Female
New England	657, 755	130, 429	527, 326	277, 566	249, 760	656, 204	130, 071	526, 133	276, 904	249, 229	1, 551	358	1, 193	662	531
Maine	191, 062	38, 807	152, 255	79, 866	72, 389	190, 933	38, 784	152, 149	79, 804	72, 345	129	23	106	62	44
New Hampshire	77, 450	13, 322	64, 128	33, 275	30, 853	77, 403	13, 304	64, 099	33, 258	30, 841	47	18	29	17	12
Vermont	114, 188	23, 850	90, 338	48, 280	42, 058	114, 114	23, 830	90, 284	48, 248	42, 036	74	20	54	32	22
Massachusetts	149, 238	28, 203	121, 035	63, 423	57, 612	148, 526	28, 024	120, 502	63, 128	57, 374	712	179	533	295	238
Rhode Island	18, 663	3, 502	15, 161	7, 961	7, 200	18, 498	3, 471	15, 027	7, 890	7, 137	165	31	134	71	63
Connecticut	107, 154	22, 745	84, 409	44, 761	39, 648	106, 730	22, 658	84, 072	44, 576	39, 496	424	87	337	185	152
Middle Atlantic	1, 817, 602	388, 471	1, 429, 131	752, 814	676, 317	1, 805, 750	385, 602	1, 420, 148	747, 788	672, 360	11, 852	2, 869	8, 983	5, 026	3, 957
New York	767, 500	152, 605	614, 895	326, 441	288, 454	763, 553	151, 659	611, 894	324, 791	287, 103	3, 947	946	3, 001	1, 650	1, 351
New Jersey	139, 255	27, 040	112, 215	59, 884	52, 331	135, 264	26, 063	109, 201	58, 119	51, 082	3, 991	977	3, 014	1, 765	1, 249
Pennsylvania	910, 847	208, 826	702, 021	366, 489	335, 532	906, 933	207, 880	699, 053	364, 878	334, 175	3, 914	946	2, 968	1, 611	1, 357
East North Central	4, 511, 148	1, 015, 798	3, 495, 350	1, 845, 260	1, 650, 090	4, 489, 014	1, 010, 770	3, 478, 244	1, 836, 138	1, 642, 106	22, 134	5, 028	17, 106	9, 122	7, 984
Ohio	1, 031, 718	220, 397	811, 321	422, 704	388, 617	1, 024, 488	218, 790	805, 698	419, 694	386, 004	7, 230	1, 607	5, 623	3, 010	2, 613
Indiana	798, 157	169, 302	628, 855	326, 196	302, 659	795, 835	168, 833	627, 002	325, 182	301, 820	2, 322	469	1, 853	1, 014	839
Illinois	996, 368	226, 724	769, 644	405, 804	363, 840	990, 317	225, 465	764, 852	403, 229	361, 623	6, 051	1, 259	4, 792	2, 575	2, 217
Michigan	791, 553	181, 044	610, 509	326, 991	283, 518	789, 162	180, 547	608, 615	325, 935	282, 680	2, 391	497	1, 894	1, 056	838
Wisconsin	893, 352	218, 331	675, 021	363, 565	311, 456	889, 212	217, 135	672, 077	362, 098	309, 979	4, 140	1, 196	2, 944	1, 467	1, 477
West North Central	4, 924, 437	1, 218, 867	3, 705, 570	1, 987, 162	1, 718, 408	4, 868, 803	1, 204, 338	3, 664, 465	1, 965, 316	1, 699, 149	55, 634	14, 529	41, 105	21, 846	19, 259
Minnesota	875, 749	214, 964	660, 785	361, 354	299, 431	873, 335	214, 276	659, 059	360, 467	298, 592	2, 414	688	1, 726	887	839
Iowa	951, 558	235, 188	716, 370	381, 030	335, 340	950, 974	235, 080	715, 894	380, 770	335, 124	584	108	476	260	216
Missouri	1, 094, 037	251, 022	843, 015	441, 900	401, 115	1, 062, 862	243, 353	819, 509	429, 233	390, 276	31, 175	7, 669	23, 506	12, 667	10, 839
North Dakota	372, 886	104, 142	268, 744	148, 012	120, 732	369, 050	102, 877	266, 173	146, 679	119, 494	3, 836	1, 265	2, 571	1, 333	1, 238
South Dakota	361, 779	98, 807	262, 972	144, 800	118, 172	351, 016	95, 734	255, 282	140, 802	114, 480	10, 763	3, 073	7, 690	3, 998	3, 692
Nebraska	566, 660	146, 880	419, 780	226, 295	193, 485	564, 431	146, 242	418, 189	225, 475	192, 714	2, 229	638	1, 591	820	771
Kansas	701, 768	167, 864	533, 904	283, 771	250, 133	697, 135	166, 776	530, 359	281, 890	248, 469	4, 633	1, 088	3, 545	1, 881	1, 664
South Atlantic	5, 660, 561	1, 603, 759	4, 056, 802	2, 059, 535	1, 997, 267	3, 731, 902	1, 025, 229	2, 706, 673	1, 384, 604	1, 322, 069	1, 928, 659	578, 530	1, 350, 129	674, 931	675, 198
Delaware	44, 662	9, 625	35, 037	18, 523	16, 514	38, 933	8, 219	30, 714	16, 115	14, 599	5, 729	1, 406	4, 323	2, 408	1, 915
Maryland	249, 319	59, 202	190, 117	99, 591	90, 526	201, 001	45, 923	155, 078	80, 809	74, 269	48, 318	13, 279	35, 039	18, 782	16, 257
District of Columbia	682	127	555	332	223	614	119	495	294	201	68	8	60	38	22
Virginia	980, 162	261, 463	718, 699	365, 218	353, 481	697, 031	179, 690	517, 341	262, 737	254, 604	283, 131	81, [illegible]	201, 358	102, 481	98, 877
West Virginia	455, 204	119, 696	335, 508	173, 500	162, 008	450, 730	118, 620	332, 110	171, 728	160, 382	4, 474	1, 076	3, 398	1, 772	1, 626
North Carolina	1, 446, 881	431, 368	1, 015, 513	513, 754	501, 759	987, 001	287, 006	699, 995	356, 100	343, 895	459, 880	144, 362	315, 518	157, 654	157, 864
South Carolina	911, 885	276, 062	635, 823	319, 154	316, 669	382, 593	113, 552	269, 041	138, 114	130, 927	529, 292	162, 510	366, 782	181, 040	185, 742
Georgia [1]	1, 309, 585	376, 865	932, 720	471, 234	461, 486	785, 233	223, 322	561, 911	286, 692	275, 219	524, 352	153, 543	370, 809	184, 542	186, 267
Florida	262, 181	69, 351	192, 830	98, 229	94, 601	188, 766	48, 778	139, 988	72, 015	67, 973	73, 415	20, 573	52, 842	26, 214	26, 628

[1] Preliminary figures.

TABLE 539.—*Farm population: 1925 census of agriculture*—Continued

Division and State	All farm population: Total	All farm population: Under 10 years of age	All farm population: 10 years of age and over: Total	All farm population: 10 years of age and over: Male	All farm population: 10 years of age and over: Female	White farm population: Total	White farm population: Under 10 years of age	White farm population: 10 years of age and over: Total	White farm population: 10 years of age and over: Male	White farm population: 10 years of age and over: Female	Colored farm population: Total	Colored farm population: Under 10 years of age	Colored farm population: 10 years of age and over: Total	Colored farm population: 10 years of age and over: Male	Colored farm population: 10 years of age and over: Female
East South Central	4, 631, 856	1, 262, 644	3, 369, 212	1, 711, 222	1, 657, 990	3, 325, 598	905, 206	2, 420, 392	1, 240, 027	1, 180, 365	1, 306, 258	357, 438	948, 820	471, 195	477, 625
Kentucky	1, 163, 001	312, 323	850, 678	439, 387	411, 291	1, 110, 666	299, 408	811, 258	418, 665	392, 593	52, 335	12, 915	39, 420	20, 722	18, 698
Tennessee	1, 173, 316	312, 489	860, 827	437, 552	423, 275	1, 005, 506	266, 746	738, 760	376, 270	362, 490	167, 810	45, 743	122, 067	61, 282	60, 785
Alabama	1, 166, 432	328, 733	837, 699	419, 732	417, 967	730, 145	207, 833	522, 312	266, 221	256, 091	436, 287	120, 900	315, 387	153, 511	161, 876
Mississippi	1, 129, 107	309, 099	820, 008	414, 551	405, 457	479, 281	131, 219	348, 062	178, 871	169, 191	649, 826	177, 880	471, 946	235, 680	236, 266
West South Central	4, 738, 793	1, 291, 295	3, 447, 498	1, 798, 057	1, 649, 441	3, 658, 977	996, 404	2, 662, 573	1, 398, 403	1, 264, 170	1, 079, 816	294, 891	784, 925	399, 654	385, 271
Arkansas	999, 840	272, 789	727, 051	375, 541	351, 510	726, 840	202, 224	524, 616	272, 899	251, 717	273, 000	70, 565	202, 435	102, 642	99, 793
Louisiana	696, 179	201, 383	494, 796	252, 281	242, 515	380, 259	110, 073	270, 186	139, 354	130, 832	315, 920	91, 310	224, 610	112, 927	111, 683
Oklahoma	925, 690	255, 240	670, 450	355, 450	315, 000	827, 646	227, 348	600, 298	319, 063	281, 235	98, 044	27, 892	70, 152	36, 387	33, 765
Texas [1]	2, 117, 084	561, 883	1, 555, 201	814, 785	740, 416	1, 724, 232	456, 759	1, 267, 473	667, 087	600, 386	392, 852	105, 124	287, 728	147, 698	140, 030
Mountain	1, 012, 100	266, 911	745, 189	412, 205	332, 984	957, 095	252, 225	704, 870	391, 095	313, 775	55, 005	14, 686	40, 319	21, 110	19, 209
Montana	183, 885	47, 282	135, 603	77, 940	57, 663	175, 727	45, 310	130, 417	75, 300	55, 117	7, 158	1, 972	5, 186	2, 640	2, 546
Idaho	172, 216	46, 142	126, 074	69, 064	57, 010	168, 268	45, 018	123, 250	67, 561	55, 689	3, 948	1, 124	2, 824	1, 503	1, 321
Wyoming	61, 181	15, 041	46, 140	26, 812	19, 328	60, 450	14, 858	45, 592	26, 503	19, 089	731	183	548	309	239
Colorado	250, 492	64, 189	186, 303	102, 084	84, 219	247, 330	63, 041	184, 289	100, 968	83, 321	3, 162	1, 148	2, 014	1, 116	898
New Mexico	147, 482	40, 708	106, 774	57, 515	49, 259	134, 618	37, 351	97, 267	52, 649	44, 618	12, 864	3, 357	9, 507	4, 866	4, 641
Arizona	71, 954	18, 615	53, 339	29, 370	23, 969	48, 820	12, 901	35, 919	20, 276	15, 643	23, 134	5, 714	17, 420	9, 094	8, 326
Utah	108, 856	31, 256	77, 600	41, 195	36, 405	106, 640	30, 549	76, 091	40, 357	35, 734	2, 216	707	1, 509	838	671
Nevada	17, 034	3, 678	13, 356	8, 225	5, 131	15, 242	3, 197	12, 045	7, 481	4, 564	1, 792	481	1, 311	744	567
Pacific	1, 029, 969	216, 956	813, 013	455, 380	357, 633	977, 645	200, 258	777, 387	433, 286	344, 101	52, 324	16, 698	35, 626	22, 094	13, 532
Washington	288, 673	60, 830	227, 843	124, 663	103, 180	281, 100	58, 504	222, 596	121, 888	100, 708	7, 573	2, 326	5, 247	2, 775	2, 472
Oregon	210, 288	43, 348	166, 940	92, 437	74, 503	206, 842	42, 242	164, 600	91, 147	73, 453	3, 446	1, 106	2, 340	1, 290	1, 050
California	531, 008	112, 778	418, 230	238, 280	179, 950	489, 703	99, 512	390, 191	220, 251	169, 940	41, 305	13, 266	28, 039	18, 029	10, 010
United States [1]	28, 984, 221	7, 395, 130	21, 589, 091	11, 299, 201	10, 289, 890	24, 470, 988	6, 110, 103	18, 360, 885	9, 673, 561	8, 687, 324	4, 513, 233	1, 285, 027	3, 228, 206	1, 625, 640	1, 602, 566

Census Bureau.

[1] Preliminary figures.

TABLE 540.—*Farm population, 1925, 1920 with estimated farm population for 1910, by States*

State	Estimated farm population, 1910 [1]	Farm population, 1920, as enumerated [1]	Farm population, 1925, as enumerated [1]
New England:			
Maine	246,984	197,601	191,062
New Hampshire	101,506	76,021	77,450
Vermont	142,372	125,263	114,188
Massachusetts	140,413	118,554	149,238
Rhode Island	20,297	15,136	18,663
Connecticut	112,124	93,302	107,154
Middle Atlantic:			
New York	921,656	800,747	767,500
New Jersey	165,456	143,708	139,255
Pennsylvania	1,050,050	948,334	910,847
East North Central:			
Ohio	1,244,769	1,139,329	1,031,718
Indiana	997,243	907,295	798,157
Illinois	1,219,237	1,098,262	996,368
Michigan	911,555	848,710	791,553
Wisconsin	902,303	920,037	893,352
West North Central:			
Minnesota	833,131	897,181	875,749
Iowa	1,052,815	984,799	951,558
Missouri	1,351,509	1,211,346	1,094,037
North Dakota	369,212	394,500	372,886
South Dakota	370,820	362,221	361,779
Nebraska	631,467	584,172	566,660
Kansas	830,197	737,377	701,768
South Atlantic:			
Delaware	58,355	51,212	44,662
Maryland	297,432	279,225	249,319
Dist. of Columbia	951	894	682
Virginia	1,065,059	1,064,417	980,162
West Virginia	543,766	477,924	455,204
So. Atlantic—Con.			
North Carolina	1,408,580	1,[illegible]01,227	1,446,881
South Carolina	970,334	1,0[illegible]4,693	911,885
Georgia [2]	1,593,809	1,68[illegible],213	1,309,585
Florida	273,397	281,893	262,181
East South Central:			
Kentucky	1,285,920	1,304,862	1,163,001
Tennessee	1,278,032	1,271,708	1,173,316
Alabama	1,382,754	1,335,885	1,166,432
Mississippi	1,344,307	1,270,482	1,129,107
West South Central:			
Arkansas	1,106,815	1,147,049	999,840
Louisiana	732,016	786,050	696,179
Oklahoma	1,022,016	1,017,327	925,690
Texas [2]	2,293,474	2,277,773	2,117,084
Mountain:			
Montana	111,273	225,667	182,885
Idaho	147,636	200,902	172,216
Wyoming	52,264	67,306	61,181
Colorado	202,857	266,073	250,492
New Mexico	183,539	161,446	147,482
Arizona	84,599	90,560	71,954
Utah	122,255	140,249	108,856
Nevada	13,321	16,164	17,034
Pacific:			
Washington	259,989	283,382	288,673
Oregon	210,128	214,021	210,288
California	416,969	516,770	531,008
United States [2]	32,076,960	31,614,269	28,984,221

Census Bureau.

[1] The farm population, as reported for 1925, comprises all persons living on farms. As reported for 1920, farm population included not only all persons living on farms, but in addition those farm laborers and their families who, while not living on farms, did live outside any incorporated place. The number thus included is believed to be relatively small. The estimated farm population for 1910 is comparable with that of 1920.

[2] The 1925 figures for Georgia and Texas and the United States total are preliminary and subject to correction.

TABLE 541.—*Per cent rural and urban population of total population for the decades 1710–1920; urban, including all places of 8,000 and more; rural, comprising the remainder*

Decade beginning—	Rural	Urban	Decade beginning—	Rural	Urban
1710	97.5	2.5	1820	95.1	4.9
1720	97.7	2.3	1830	93.3	6.7
1730	95.4	4.6	1840	91.5	8.5
1740	95.7	4.3	1850	87.5	12.5
1750	96.5	3.5	1860	83.9	16.1
1760	96.5	3.5	1870	79.1	20.9
1770	96.2	3.8	1880	77.4	22.6
1780	97.3	2.7	1890	71.0	29.0
1790	96.7	3.3	1900	67.1	32.9
1800	96.0	4.0	1910	61.3	38.7
1810	95.1	4.9	1920	56.2	43.8

United States Census.

TABLE 542.—*Per cent rural and urban population of total population for the decades 1880–1920; urban, including all places of 2,500 and more; rural, comprising the remainder*

Decade	Rural	Urban	Decade	Rural	Urban
1880	70.5	29.5	1910	54.2	45.8
1890	63.9	36.1	1920	48.6	51.4
1900	60.0	40.0			

United States Census.

FARM EQUIPMENT

TABLE 543.—*Farm equipment manufactured and sold in the United States, 1920–1925*

Type of equipment and year	Quantity			Value		
	Manufactured	Sold		Manufactured	Sold	
		In the United States	For export		In the United States	For export
Planting machinery:	*Number*	*Number*	*Number*	*1,000 dolls.*	*1,000 dolls.*	*1,000 dolls.*
1920	472,248	498,853	16,822	20,097	21,612	1,458
1921	310,855	209,572	9,689	8,441	5,870	166
1922	189,230	192,415	8,613	4,214	5,241	449
1923	----------	----------	----------	9,588	9,251	855
1924	----------	----------	----------	9,699	8,659	1,536
1925 [1]	----------	----------	----------	13,675	11,930	2,600
Plows and listers.						
1920	1,361,578	1,215,979	221,077	43,222	37,699	7,200
1921	566,209	407,760	102,262	13,007	9,071	2,648
1922	441,800	455,836	58,133	9,680	11,215	1,401
1923	----------	----------	----------	24,252	20,086	4,673
1924	----------	----------	----------	21,030	17,651	5,581
1925 [1]	----------	----------	----------	23,645	19,710	7,309
Tillage implements:						
1920	----------	----------	----------	22,919	20,636	1,665
1921	----------	----------	----------	10,436	7,488	980
1922	----------	----------	----------	4,777	5,472	325
1923	----------	----------	----------	[2] 11,397	[2] 10,341	[2] 715
1924	----------	----------	----------	[2] 9,452	[2] 8,309	[2] 1,003
1925 [1]	----------	----------	----------	[2] 9,796	[2] 9,724	[2] 1,335
Cultivators:						
1920	580,179	589,830	45,863	15,186	17,296	670
1921	447,627	368,365	41,939	8,265	6,545	282
1922	259,535	305,773	12,723	4,272	5,571	226
1923	----------	----------	----------	[3] 13,433	[3] 13,180	[3] 513
1924	----------	----------	----------	[3] 14,806	[3] 13,577	[3] 690
1925 [1]	----------	----------	----------	[3] 17,539	[3] 17,113	[3] 1,087
Haying machinery:						
1920	411,556	338,112	94,011	24,703	19,667	6,230
1921	219,429	139,412	39,968	10,230	6,776	1,807
1922	154,367	189,567	14,320	7,625	8,831	734
1923	241,320	212,408	30,631	15,503	14,018	2,085
1924	----------	----------	----------	15,767	12,158	3,000
1925 [1]	----------	----------	----------	15,457	12,247	3,320
Harvesting machinery.						
1920	232,177	168,829	41,334	41,015	30,626	7,339
1921	119,111	60,667	33,933	18,028	8,977	5,840
1922	80,565	80,337	16,512	11,822	11,242	2,747
1923	109,937	81,037	39,913	26,278	17,033	10,792
1924	----------	----------	----------	29,752	14,849	12,769
1925 [1]	----------	----------	----------	28,419	23,460	9,201
Machines for preparing crops for market or use						
1920	196,772	159,918	30,220	35,612	34,749	3,010
1921	87,938	64,459	9,670	21,436	15,032	1,988
1922	172,258	146,938	39,024	18,294	19,873	3,487
1923	----------	----------	----------	30,761	22,918	5,838
1924	----------	----------	----------	23,682	19,533	2,834
1925 [1]	----------	----------	----------	27,697	27,085	4,033
Tractors:						
Gas—						
1920	203,207	162,988	29,143	193,563	161,896	30,850
1921	73,198	(4)	(4)	50,295	(4)	(4)
1922	99,692	101,192	10,232	52,178	52,440	6,458
1923	----------	----------	----------	[5] 93,783	[5] 77,419	[5] 14,682
1924	----------	----------	----------	[5] 83,053	[5] 74,539	[5] 16,810
1925 [1]	----------	----------	----------	[5] 120,559	[5] 92,597	[5] 27,538

[1] Preliminary.
[2] Reported "Harrows, rollers, and pulverizers."
[3] Reported as "Cultivators and weeders."
[4] The sales statistics for 1921 relate exclusively to complete machines and were compiled almost wholly from returns made by 427 establishments classified in the "agricultural implements" industry. No sales data were collected for that year from establishments manufacturing gas tractors, horse-drawn vehicles, barn equipment, and miscellaneous farm equipment.
[5] Reported as "Farm tractors and traction engines."

TABLE 543.—*Farm equipment manufactured and sold in the United States, 1920–1925*—Continued

Type of equipment and year	Quantity			Value		
	Manufactured	Sold		Manufactured	Sold	
		In the United States	For export		In the United States	For export
Tractors—Continued.						
Steam—	*Number*	*Number*	*Number*	*1,000 dolls.*	*1,000 dolls.*	*1,000 dolls.*
1920	1,766	1,401	121	4,661	3,903	370
1921	1,168	724	72	2,874	1,737	188
1922	396	519	56	1,065	1,421	223
1923	620	424	79	1,893	1,179	365
1924	1,518	1,486	83	6,306	6,070	3,378
1925 [1]						
Horse-drawn vehicles:						
1920	449,095	430,459	3,810	42,423	40,929	339
1921	92,816	(4)	(4)	8,861	(4)	(4)
1922	143,548	158,207	2,028	11,953	13,410	116
1923	254,203	247,519	4,723	21,553	23,157	1,041
1924				15,537	15,408	135
1925 [1]				17,297	17,294	246
Barn and barnyard equipment:						
1921				[6] 430	[6] 437	
1922				4,536	4,306	3
1923				9,910	9,636	100
1924				6,440	6,369	70
1925 [1]				8,970	8,889	122
Miscellaneous:						
1920				93,541	82,429	7,495
1921				175,738	(4)	(4)
1922				79,224	83,886	5,494
1923				105,396	94,937	8,055
1924				94,149	86,873	7,560
1925 [1]				100,683	92,796	8,143
Grand total:						
1920				536,945	471,442	66,626
1921				328,041	(4)	(4)
1922				209,640	222,908	21,663
1923				364,854	311,976	49,349
1924				323,367	277,925	51,988
1925 [1]				383,737	332,845	64,934

Division of Statistical and Historical Research. Data for 1920 compiled from reports of the Bureau of Public Roads. Data for 1921–1924 compiled from reports of the Bureau of the Census.

[1] Preliminary.
[4] The sales statistics for 1921 relate exclusively to complete machines and were compiled almost wholly from returns made by 427 establishments classified in the "agricultural implements" industry. No sales data were collected for that year from establishments manufacturing gas tractors, horse-drawn vehicles, barn equipment, and miscellaneous farm equipment.
[6] Figures for 1921 relate to barn equipment only. No data for 1920.

TABLE 544.—*Estimated business of farmers business organizations, by kinds and geographic divisions, 1925*—Continued

Division and State	Poultry and poultry products		Tobacco		Wool		Miscellaneous selling		Miscellaneous buying		Total	
	Number of associations	Amount of business	Number of associations	Amount of business	Number of associations	Amount of business	Number of associations	Amount of business	Number of associations	Amount of business	Number of associations	Amount of business
		1,000 dollars		*1,000 dollars*		*1,000 dollars*		*1,000 dollars*		*1,000 dollars*		*1,000 dollars*
New England	3	630	3	7,250	3	60	27	3,770	94	14,470	259	85,170
Maine	1	210			1	50	8	800	31	3,000	82	12,460
New Hampshire							2	450	7	1,730	14	3,230
Vermont							12	1,700	4	560	61	11,040
Massachusetts			1	10	2	10	4	400	17	7,700	48	39,130
Rhode Island							1	420	4	180	7	1,300
Connecticut	2	420	2	7,240					31	1,300	47	18,010
Middle Atlantic	3	610	5	90	40	470	45	3,750	165	15,950	522	153,080
New York	2	600	1	70	32	360	18	950	55	10,620	286	103,760
New Jersey							3	800	12	830	20	5,930
Pennsylvania	1	10	4	20	8	110	24	2,000	98	4,500	216	43,390
East North Central	5	730	6	3,150	12	2,370	190	18,250	204	28,170	3,075	558,270
Ohio	1	200	2	1,280	3	2,000	17	3,500	33	6,260	395	107,340
Indiana	1	10			6	170	13	1,050	32	3,460	330	60,440
Illinois	1	20			1	40	22	1,700	31	4,380	822	195,210
Michigan	1	350			1	140	77	7,400	36	5,130	436	82,200
Wisconsin	1	50	4	1,870	1	20	61	4,600	72	8,940	1,092	113,080
West North Central	20	10,240			13	940	203	26,100	499	37,880	4,825	836,630
Minnesota	11	1,900			5	250	22	2,100	113	8,110	1,383	223,980
Iowa	1	10			1	140	17	3,300	104	6,660	1,094	172,710
Missouri	8	8,330			1	10	133	16,400	68	6,700	537	83,490
North Dakota					2	120	9	300	28	1,600	460	91,280
South Dakota					2	380	4	1,350	29	1,320	397	74,080
Nebraska							10	1,650	81	7,660	488	91,930
Kansas					2	40	8	1,000	76	5,830	466	99,160

South Atlantic	2	50	4	25,920	3	290	48	3,360	77	8,955	385	152,325
Delaware							2	200	4	20	12	960
Maryland			1	3,000			2	270	5	1,570	16	12,200
District of Columbia											1	2,300
Virginia					1	100	13	1,000	39	2,450	96	21,615
West Virginia	1	10			2	190	6	550	6	470	42	2,820
North Carolina			2	22,520			10	300	15	3,620	50	43,380
South Carolina							1	10	1	15	18	18,130
Georgia	1	40	1	400			12	1,000	4	210	46	16,210
Florida							2	30	3	600	104	34,710
East South Central	8	80	5	53,580	7	230	65	3,150	27	4,720	277	117,270
Kentucky	4	10	2	53,380	3	130	9	300	16	1,040	56	58,650
Tennessee	2	70	3	200	4	100	19	850	7	740	111	9,560
Alabama							15	1,000	4	2,940	63	16,940
Mississippi	2						22	1,000			47	32,120
West South Central	11	415	1	10			45	5,360	52	4,390	454	128,630
Arkansas	2	5					7	340	14	470	101	17,935
Louisiana			1	10			7	420	2	860	38	13,340
Oklahoma							9	2,100	20	2,080	143	46,550
Texas	9	410					22	2,500	16	980	172	50,805
Mountain	8	1,930			10	2,660	42	4,760	34	2,165	363	70,950
Montana	2	70			1	1,160	5	50	8	510	102	19,690
Idaho	1	330			2	70	9	2,300	8	180	59	13,250
Wyoming	1	20			1	40	3	550	3	350	18	2,520
Colorado					2	170	7	1,000	5	480	101	28,600
New Mexico	1	10					6	300	1	5	20	2,160
Arizona					1	20	6	500	2	140	20	5,240
Utah	3	1,500			3	1,200	5	50	7	500	41	4,410
Nevada							1	10			2	80
Pacific	11	25,315			3	2,980	17	1,500	65	18,300	643	297,675
Washington	2	11,100			1	100	5	100	42	5,260	172	52,060
Oregon	2	1,615			1	2,500	8	1,000	8	460	121	21,655
California	7	12,600			1	380	4	400	15	12,580	350	223,960
United States	71	40,000	24	90,000	91	10,000	682	70,000	1,217	135,000	10,803	2,400,000

Division of Cooperative Marketing.

TABLE 545.—*Associations and estimated* [1] *membership, by kinds and States, 1925*

Division and State	Cotton and cotton products		Dairy products		Forage		Fruits and vegetables		Grain		Livestock		Nuts	
	Associations	Members	Associations	Members	Associations	Members	Associations	Members	Associations	Members	Associations	Members	Associations	Members
New England			80	36,360			45	2,470	3	160	1	40		
Maine			7	4,600			34	1,700						
New Hampshire			4	400					1	120				
Vermont			42	5,500			1	40	1	10	1	40		
Massachusetts			18	22,500			5	520	1	30				
Rhode Island			2	160										
Connecticut			7	3,200			5	210						
Middle Atlantic			143	113,800	2	200	109	11,870	7	1,290	3	450		
New York			86	79,300	2	200	84	7,900	4	930	2	250		
New Jersey							5	2,720						
Pennsylvania			57	34,500			20	1,250	3	360	1	200		
East North Central	1	30	906	130,500			153	14,800	924	144,700	674	147,230		
Ohio			39	25,900			21	1,400	205	31,800	74	27,700		
Indiana			25	5,100			24	2,000	138	36,000	91	24,630		
Illinois	1	30	39	18,400			22	1,400	432	48,600	273	50,850		
Michigan			87	26,600			60	7,200	92	18,900	82	16,900		
Wisconsin			716	54,500			26	2,800	57	9,400	154	27,150		
West North Central	5	1,000	874	131,180			116	12,390	2,090	302,560	1,005	236,650		
Minnesota			578	78,200			53	5,300	301	50,800	300	52,300		
Iowa			226	33,700			3	350	368	47,300	374	58,350		
Missouri	5	1,000	11	1,400			31	4,420	163	21,100	117	88,700		
North Dakota			16	1,500			13	980	332	46,000	60	7,450		
South Dakota			25	8,100			8	620	235	32,300	94	17,600		
Nebraska			11	7,230			5	580	344	42,760	37	6,600		
Kansas			7	1,350			3	140	347	62,300	23	5,650		
South Atlantic	25	102,600	23	7,200	2	200	162	24,540	5	920	30	4,300	4	12,570
Delaware			1	20			5	350						
Maryland			2	3,730			4	1,080	2	700				
District of Columbia			1	1,000										
Virginia			13	2,080	1	80	14	8,000	2	140	12	2,300	1	4,000
West Virginia							9	640			18	2,000		

North Carolina	6	37,400	5	320			11	730	1	20				
South Carolina	4	15,200			1	120	11	1,140						
Georgia	15	50,000					10	4,300						
Florida			1	70			98	8,300					3	8,570
East South Central	18	59,100	37	11,280	2	450	82	9,660	3	170	22	4,600	1	200
Kentucky			6	7,060			7	1,770	1	70	8	1,450		
Tennessee	3	9,100	25	3,900	1	200	36	4,000	2	100	8	2,000	1	200
Alabama	12	28,100	3	200	1	250	22	2,360			6	1,150		
Mississippi	3	21,900	3	120			17	1,530						
West South Central	68	136,700	8	770	2	20	147	13,020	112	33,700	7	1,360	1	30
Arkansas	6	19,500					70	5,650	2	1,200				
Louisiana	2	6,800	1	20			20	3,150	5	2,100				
Oklahoma	11	55,400	2	170			8	1,270	89	23,400	4	860		
Texas	49	55,000	5	580	2	20	49	2,950	16	7,000	3	500	1	30
Mountain	4	570	33	6,290	3	500	76	19,760	132	31,030	21	2,670		
Montana			6	330			4	450	64	17,200	12	1,450		
Idaho			9	4,100			18	2,300	12	1,330				
Wyoming			1	60			2	110	6	600	1	20		
Colorado			6	770			34	6,950	40	10,900	7	1,000		
New Mexico	1	330	1	50	2	200	2	80	5	300	1	200		
Arizona	3	240	1	380	1	300	5	370	1	290				
Utah			9	600			11	9,500	3	380				
Nevada									1	40				
Pacific			93	22,300	5	1,630	347	71,490	62	5,470	7	2,700	33	7,200
Washington			24	9,800	1	1,100	55	6,100	42	2,800				
Oregon			50	4,500	1	260	37	5,440	9	540	2	200	3	200
California			19	8,000	3	270	255	59,950	11	2,130	5	2,500	30	7,000
United States	121	300,000	2,197	460,000	16	3,000	1,237	180,000	3,338	520,000	1,770	400,000	39	20,000

Division of Cooperative Marketing.

[1] Based on reports from 9,463 associations.

TABLE 545.—*Associations and estimated membership, by kinds and States, 1925*—Continued

Division and State	Poultry and poultry products		Tobacco		Wool and mohair		Miscellaneous selling		Miscellaneous buying [2]		Total	
	Associations	Members	Associations	Members	Associations	Members	Associations	Members	Associations	Members	Associations [3]	Members
New England	3	800	3	5,040	3	560	27	4,050	94	25,520	259	175,000
Maine	1	600			1	500	8	1,200	31	5,800	82	14,400
New Hampshire							2	980	7	1,100	14	2,600
Vermont							12	1,510	4	1,100	61	8,200
Massachusetts			1	40	2	60	4	250	17	15,800	48	39,200
Rhode Island							1	110	4	130	7	400
Connecticut	2	200	2	5,000					31	1,590	47	10,200
Middle Atlantic	3	1,000	5	600	40	2,400	45	7,400	165	20,990	522	160,000
New York	2	600	1	200	32	1,500	18	2,980	55	6,140	286	100,000
New Jersey							3	1,440	12	1,840	20	6,000
Pennsylvania	1	400	4	400	8	900	24	2,980	98	13,010	216	54,000
East North Central	5	3,100	6	13,000	12	18,400	190	35,320	204	67,920	3,075	575,000
Ohio	1	2,000	2	5,000	3	12,000	17	4,140	33	5,360	395	115,300
Indiana	1	200			6	5,000	13	3,600	32	3,770	330	80,300
Illinois	1	100			1	400	22	6,170	31	5,050	822	131,000
Michigan	1	500			1	900	77	12,260	36	45,040	436	128,300
Wisconsin	1	300	4	8,000	1	100	61	9,150	72	8,700	1,092	120,100
West North Central	20	25,100			13	19,700	203	40,530	499	80,590	4,825	850,000
Minnesota	11	11,000			5	2,000	22	3,570	113	14,230	1,383	217,400
Iowa	1	100			1	13,500	17	2,600	104	22,900	1,094	179,800
Missouri	8	14,000			1	200	133	29,120	68	10,660	537	170,600
North Dakota					2	1,000	9	1,050	28	2,320	460	60,300
South Dakota					2	1,800	4	880	29	3,700	397	65,000
Nebraska							10	1,480	81	15,450	488	74,100
Kansas					2	1,200	8	1,830	76	10,330	466	82,800
South Atlantic	2	350	4	102,800	3	2,500	48	11,110	77	10,890	385	280,000
Delaware							2	200	4	630	12	1,200
Maryland			1	4,700			2	330	5	2,000	16	12,600
District of Columbia											1	1,000
Virginia					1	1,000	13	3,370	39	4,730	96	25,700
West Virginia	1	300			2	1,500	6	1,050	6	610	42	6,100

North Carolina			2	98, 000			10	1, 170	15	2, 260	50	139, 900
South Carolina							1	100	1	40	18	16, 600
Georgia	1	50	1	100			12	4, 570	4	310	46	67, 900
Florida							2	320	3	310	104	9, 000
East South Central	8	700	5	128, 500	7	1, 800	65	16, 920	27	11, 620	277	295, 000
Kentucky	4	300	2	178, 000	3	1, 300	9	1, 520	16	3, 230	56	194, 700
Tennessee	2	200	3	500	4	500	19	5, 650	7	6, 250	111	32, 600
Alabama							15	4, 100	4	2, 140	63	38, 300
Mississippi	2	200					22	5, 650			47	29, 400
West South Central	11	3, 400	1	60			45	44, 790	52	16, 150	454	250, 000
Arkansas	2	200					7	26, 400	14	1, 550	101	54, 500
Louisiana			1	60			7	2, 520	2	11, 150	38	25, 800
Oklahoma							9	8, 700	20	2, 400	143	92, 200
Texas	9	3, 200					22	7, 170	16	1, 050	172	77, 500
Mountain	8	3, 150			10	610	42	7, 390	34	3, 030	363	75, 000
Montana	2	400			1	200	5	620	8	550	102	21, 200
Idaho	1	1, 000			2	50	9	1, 790	8	630	59	11, 200
Wyoming	1	200			1	50	3	700	3	560	18	2, 300
Colorado					2	100	7	1, 140	5	340	101	21, 200
New Mexico	1	50					6	1, 270	1	20	20	2, 500
Arizona					1	110	6	740	2	180	20	2, 600
Utah	3	1, 500			3	100	5	970	7	750	41	13, 800
Nevada							1	160			2	200
Pacific	11	12, 400			3	4, 030	17	2, 490	65	10, 290	643	140, 000
Washington	2	5, 000			1	30	5	720	42	6, 150	172	31, 700
Oregon	2	1, 000			1	3, 000	8	1, 120	8	840	121	17, 100
California	7	6, 400			1	1, 000	4	650	15	3, 300	350	91, 200
United States	71	50, 000	24	300, 000	91	50, 000	682	170, 000	1, 217	247, 000	10, 803	2, 700, 000

Division of Cooperative Marketing.

[2] Including farmers' cooperative stores.
[3] Number of associations listed with the Department of Agriculture, December, 1925.

TABLE 546.—*Number, estimated membership, and estimated amount of business of farmers' cooperative business organizations, by commodity groups, 1915 and 1925*

Commodity group	Associations listed [1]				Estimated membership				Estimated business			
	1915		1925		1915		1925		1915		1925	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Amt.	Per cent	Amt.	Per cent
									Thous.		*Thous.*	
Dairy products	1,708	31.5	2,197	20.3	140,567	21.6	460,000	17.0	$89,061	[2] 14.0	$535,000	22.3
Grain	1,637	30.2	3,338	30.9	166,828	25.6	520,000	19.3	289,689	45.6	750,000	31.2
Fruits and vegetables	871	16.0	1,237	11.4	109,916	16.9	180,000	6.7	201,513	31.7	280,000	11.7
Cotton and cotton products	213	3.9	121	1.1	18,404	2.8	300,000	11.1	1,502	.2	150,000	6.2
Livestock	96	1.8	1,770	16.4	13,438	2.1	400,000	14.8	5,624	[3] .9	320,000	13.3
Tobacco	43	.8	24	.2	17,849	2.7	300,000	11.1	6,450	1.0	90,000	3.8
All others	856	15.8	2,116	19.7	184,184	28.3	540,000	20.0	41,970	6.6	275,000	11.5
Total	5,424	100.0	10,803	100.0	651,186	100.0	2,700,000	100.0	635,839	100.0	2,400,000	100.0

Division of Cooperative Marketing.

[1] Number reporting to Department of Agriculture.
[2] Including sales by milk bargaining associations.
[3] Including sales by terminal livestock sales agencies of livestock not received from cooperative shipping associations.

TABLE 547.—*Number, estimated membership, and estimated amount of business of farmers' cooperative business organizations, by geographic divisions, 1915 and 1925*

Geographic division	Associations listed [1]				Estimated membership				Estimated business			
	1915		1925		1915		1925		1915		1925	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Amt.	Per cent	Amt.	Per cent
									Thous.		*Thous.*	
West North Central	2,577	47.5	4,825	44.7	254,425	39.1	850,000	31.5	$286,535	45.1	$836,630	34.9
East North Central	973	17.9	3,075	28.5	107,331	16.5	575,000	21.3	90,114	14.2	558,270	23.3
Pacific	416	7.7	643	5.9	65,950	10.1	140,000	5.2	150,511	23.7	297,675	12.4
South Atlantic	329	6.1	385	3.6	37,097	5.7	280,000	10.4	10,269	1.6	152,325	6.3
West South Central	315	5.8	454	4.2	30,793	4.7	250,000	9.2	7,684	1.2	128,630	5.4
Mountain	232	4.3	363	3.3	34,731	5.4	75,000	2.8	20,486	3.2	70,950	2.9
East South Central	215	3.9	277	2.6	35,834	5.5	295,000	10.9	7,170	1.1	117,270	4.9
Middle Atlantic	210	3.9	522	4.8	63,971	9.8	160,000	5.9	56,096	8.8	153,080	6.4
New England	157	2.9	259	2.4	21,054	3.2	75,000	2.8	6,974	1.1	85,170	3.5
Total	5,424	100.0	10,803	100.0	651,186	100.0	2,700,000	100.0	635,839	100.0	2,400,000	100.0

Division of Cooperative Marketing.

[1] Number reporting to Department of Agriculture.

TABLE 548.—*Freight tonnage originating on railways in the United States, 1920–1926*

[In thousands—i. e., 000 omitted]

Commodity	Calendar year						
	1920	1921	1922	1923	1924	1925	1926 [1]
FARM PRODUCTS							
Animal products:							
Animals, live—	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Horses and mules	936	428	491	603	531	544	513
Cattle and calves	9,809	8,522	9,567	9,400	9,316	9,331	9,241
Sheep and goats	1,344	1,175	1,159	1,159	1,215	1,224	1,270
Hogs	5,421	5,504	5,795	6,944	6,707	5,501	5,271
Packing-house products—							
Fresh meats	2,770	2,578	2,614	3,023	3,001	2,904	2,996
Hides and leather	1,051	972	1,081	1,090	1,025	1,026	984
Other packing-house products	2,206	2,094	2,049	2,397	2,395	2,139	2,023
Total packing-house products	6,027	5,644	5,744	6,510	6,421	6,069	6,003
Eggs	536	551	565	597	572	591	644
Butter and cheese	425	434	507	571	649	686	725
Poultry	264	276	292	366	376	357	408
Wool	292	400	360	291	294	263	281
Other animals and products	1,540	1,329	1,750	1,814	1,668	1,758	1,888
Total animal products	26,594	24,263	26,230	28,255	27,749	26,324	26,244
Vegetable products:							
Cotton	3,379	3,191	3,074	2,887	3,261	4,127	4,482
Fruits and vegetables	10,045	9,255	9,683	10,398	10,863	11,586	12,223
Potatoes	4,118	4,639	4,829	4,698	4,590	4,614	4,339
Grain and grain products—							
Grain—							
Wheat	23,131	29,039	24,805	23,091	27,442	21,548	24,379
Corn	12,689	17,218	19,275	15,151	14,883	12,680	13,924
Oats	8,615	7,542	7,646	8,332	8,507	8,450	6,496
Other grain	5,669	4,568	5,245	4,739	5,616	4,564	4,014
Grain products—							
Flour and meal	10,952	10,553	10,694	10,518	10,330	9,901	10,137
Other mill products	8,891	7,881	9,000	10,002	10,083	9,578	9,768
Total grain and grain products	69,947	76,801	76,665	71,833	76,861	66,721	68,718
Hay, straw, and alfalfa	7,957	5,154	5,723	5,965	5,802	5,507	5,028
Sugar, sirup glucose, and molasses	5,664	4,767	5,091	4,891	5,356	5,669	5,744
Tobacco	1,081	927	882	1,099	1,069	1,038	1,010
Other vegetable products	15,251	15,186	11,868	13,406	15,277	17,120	17,609
Total vegetable products	117,442	119,920	117,815	115,177	123,084	116,382	119,153
Canned goods (food products)	3,074	2,627	3,106	3,435	3,731	4,143	4,070
Total farm products	147,110	146,810	147,151	146,867	154,564	146,849	149,467
OTHER FREIGHT							
Products of mines	712,154	511,271	532,998	713,735	638,520	678,335	758,064
Products of forests	100,766	76,419	89,059	115,618	108,090	107,387	104,859
Manufactures	242,189	163,691	211,308	258,471	246,432	273,986	284,640
Merchandise, all l. c. l. freight	53,202	41,992	43,229	44,339	40,551	40,580	39,498
Total tonnage	1,255,421	940,183	1,023,745	1,279,030	1,188,157	1,247,137	1,336,528

Division of Statistical and Historical Research Compiled from reports of the Interstate Commerce Commission. Figures for earlier years appear in previous issues of the Yearbook.

[1] Preliminary.

TABLE 549.—*Index numbers showing changes in 50 representative freight rates on agricultural products, by months, 1909–1925*

[Average for year 1913=100]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
1909	100.0	100.0	99.9	99.9	99.9	99.9	99.9	100.0	100.1	100.1	99.9	99.9	**100.0**
1910	99.9	100.3	100.3	100.3	100.3	100.5	100.5	100.5	100.5	100.5	100.5	100.4	**100.4**
1911	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.5	**100.4**
1912	100.5	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.5	100.5	100.5	**100.4**
1913	100.5	100.5	100.5	100.5	100.5	100.5	100.2	99.5	99.3	99.3	99.3	99.3	**100.0**
1914	99.3	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.6	**99.4**
1915	99.7	100.0	100.2	100.2	100.3	100.3	100.3	100.3	100.3	100.5	100.4	100.4	**100.2**
1916	100.6	100.6	100.6	100.6	100.6	100.6	100.6	100.6	100.7	100.7	100.7	100.7	**100.6**
1917	100.7	100.7	100.8	100.8	100.8	100.8	100.8	101.6	101.9	102.2	102.4	102.4	**101.3**
1918	102.4	102.4	102.4	103.2	103.3	108.8	130.7	130.7	130.7	130.5	180.3	130.3	**117.1**
1919	130.3	130.3	130.4	130.5	130.5	130.8	130.8	130.5	130.7	131.4	131.4	131.6	**130.8**
1920	131.8	131.8	132.1	132.1	132.1	131.9	131.7	140.2	176.1	176.1	176.1	176.3	**147.4**
1921	176.8	176.8	177.3	177.8	177.8	177.8	177.7	177.4	177.2	176.1	175.8	175.8	**177.0**
1922	160.5	160.5	160.5	160.7	160.3	159.4	157.2	157.2	157.5	157.9	157.9	157.9	**159.0**
1923	157.9	157.9	157.9	157.9	157.9	157.9	157.9	157.9	157.9	157.9	157.9	157.9	**157.9**
1924	157.9	157.9	157.9	157.9	157.9	157.9	157.7	157.5	157.5	157.5	157.5	157.5	**157.7**
1925	157.5	157.5	157.5	157.5	157.5	157.5	157.5	157.5	157.5	157.5	157.5	157.5	**157.5**
1926													

Division of Statistical and Historical Research. The commodities on which this index is based will be found in the Yearbook, 1922, pp. 1013–18.

TABLE 550.—*Wheat: Index numbers of freight rates, from representative points in producing regions in the United States to their terminal markets, 1913–1926*

Wheat areas	Year beginning July 1													
	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926 [1]
Spring [2]	100	100	101	101	101	127	127	164	160	149	149	149	148	**148**
Western [3]	100	100	100	100	100	126	126	154	148	140	140	140	140	**140**
Winter [4]	100	101	100	101	101	129	128	166	162	152	152	152	152	**152**
Hard winter [5]	100	100	100	100	100	128	128	165	160	150	150	150	150	**150**
Hard winter, excluding export rates [6]	100	100	99	99	99	124	123	158	154	143	143	143	143	**143**

Division of Statistical and Historical Research.

These relatives are based on the average of the monthly rates in effect during the crop year. Rates in effect in 1913 equal 100.

[1] These rates in effect up to Feb. 21, 1927.

[2] Based on local rates from Larimore, Leal, Makota, N. Dak., Groton, S. Dak., Scobey, Mont., and Osakis, Minn., to Minneapolis, Minn. The same rates apply to Duluth except from Groton, S. Dak., and Osakis, Minn. No proportional rates available.

[3] Based on local rates from Colfax, Wash., to Portland, Oreg., Moscow, Idaho, to Seattle, Wash., and Pendleton, Oreg., to Portland, Oreg. No export rates available.

[4] Based on local rates from Minden, Nebr., Wray, Colo., Brewster, Kans., Great Bend, Kans., Hutchinson, Kans., and Cherokee, Okla., to Kansas City, Mo.; Marshall, Mo., to St. Louis, Mo.; LaPrairie, Ill., to St. Louis, Mo.; and export rates from Wichita, Kans., to Galveston, Tex.; and Enid, Okla., to New Orleans, La.

[5] Based on all rates named in note 4 except the rate from LaPrairie, Ill., to St. Louis, Mo.

[6] Based on all rates named in note 4 except rate from LaPrairie, Ill., to St. Louis, Mo., and the export rates from Wichita, Kans., to Galveston, Tex., and Enid, Okla., to New Orleans, La.

TABLE 551.—*Livestock: Index numbers of freight rates from representative points in producing regions in the United States to their terminal markets, 1913–1925*

Kind of livestock and district	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925 [1]
Cattle: [2]													
Western district	100.0	99.9	100.2	100.2	100.9	125.6	127.9	165.6	164.4	155.4	154.8	152.9	152.5
Eastern district	100.0	103.5	108.3	113.2	116.2	157.6	157.4	207.2	210.9	197.5	200.7	199.4	199.4
Southern district	100.0	100.0	98.9	97.7	98.1	120.3	120.3	148.1	146.8	136.9	130.0	130.0	130.0
United States	100.0	100.4	101.2	101.7	102.7	129.4	131.3	170.2	169.6	160.6	159.7	158.0	157.6
Hogs: [3]													
Western district	100.0	99.3	99.4	99.2	99.7	123.6	124.3	160.9	160.1	151.8	151.1	149.1	146.9
Eastern district	100.0	102.0	106.6	115.7	122.3	168.8	168.8	221.5	229.8	217.8	216.4	213.2	212.7
United States	100.0	99.8	100.7	102.1	103.7	131.7	132.2	171.7	172.5	163.6	162.7	160.5	158.6
Sheep: [4]													
Western district	100.0	98.6	98.4	98.3	98.8	118.4	119.4	152.4	147.9	137.4	137.4	136.5	136.4
Eastern district	100.0	102.0	105.1	112.0	128.8	166.9	167.4	224.9	226.1	198.9	199.1	198.9	198.9
United States	100.0	99.1	99.4	100.4	103.4	125.9	126.8	163.6	159.9	146.9	146.9	146.1	146.0

Division of Statistical and Historical Research.

These relatives are based on the average of the monthly rates in effect during the crop year. Rates in effect in 1913 equal 100.

[1] These rates in effect up to Aug. 1, 1926, for hogs and sheep and July 21, 1926, for cattle.

[2] Based on local rates as follows:

Western district.—Lanark, Ill., Lancaster, Wis., Hampton, Iowa, and Miles City, Mont., to Chicago; Fort Collins, Colo., to Denver; Salisbury, Mo., to East St. Louis; Midland, Tex., to Fort Worth; Carrolton, Mo., Bazaar, Kans., and Hereford, Tex., to Kansas City, Lancaster, Wis., to Milwaukee; Lawton, Okla., to Oklahoma City; Harlan, Iowa, and Hyannis, Nebr., to Omaha; Tarkio, Mo., and Oberlin, Kans., to St. Joe, Fergus Falls, Minn., and Hettinger, N. Dak., to St Paul, Belle Fourche, S. Dak., and Sibley, Iowa, to Sioux City; Ashland, Kans., and Mulhall, Okla., to Wichita, Red Bluff, Calif., to San Francisco; Denver to Sidney, Nebr., and Longmont, Colo.; Kansas City to Marysville, Kans., and Gallatin, Mo., Omaha to Atlantic, Iowa, and Schuyler, Nebr.; Sioux City to Sheldon, Iowa; Wichita to Eureka, Kans.

Eastern district.—Bad Axe, Mich., and Dansville, N. Y., to Buffalo; Belle Fontaine, Ohio, to Cleveland; Cass City, Mich., to Detroit; Taylorville, Ill., to East St. Louis; Hillsboro, Ind., to Indianapolis; Chicago to Jersey City; London, Ohio, to Pittsburgh; Chicago to Rantoul, Ill.; East St. Louis to Charleston, Ill.

Southern district.—Winchester, Ky., to Cincinnati; Port Gibson, Miss., to East St. Louis; Bowling Green, Ky., to Louisville; Pulaski, Tenn., to Nashville, Tenn.

[3] Based on local rates as follows:

Western district.—Lanark, Ill., Lancaster, Wis., and Marshalltown, Iowa, to Chicago; Centerville, Iowa, Shelbyville, Mo., and Parsons, Kans., to East St. Louis; Nevada, Mo., Red Cloud, Nebr., and Belleville, Kans., to Kansas City; Schleswig, Iowa, and York, Nebr., to Omaha; Maryville, Mo., to St. Joe; Fergus Falls, Minn., Cumberland, Wis., and Jamestown, N. Dak., to St. Paul; Lawton, Okla., to Oklahoma City; Hartley, Iowa, Wessington, S. Dak., to Sioux City; Herrington, Kans., to Wichita; Columbus, Wis., to Milwaukee; Hoyt, S. Dak., to Sioux Falls; Sheldon, Iowa, to Mason City, Iowa; Longmont, to Denver; Paducah to Fort Worth.

Eastern district.—Argos, Ind., to Buffalo; St Johns, Mich., to Detroit; Kenton, Ohio, to Cleveland; Butlerville, Ind., to Cincinnati, Mendon, Ill., to East St. Louis; Westphalia, Ind., and Charleston, Ill., to Indianapolis; Washington Court House, Ohio, to Pittsburgh.

[4] Based on local rates as follows

TABLE 552.—*Average weight per carload of freight originating on Class I railroads in the United States, 1920–1926*

Commodity	1920	1921	1922	1923	1924	1925	1926 [1]
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Wheat	40.21	39.89	40.17	40.35	40.78	40.93	41.71
Corn	36.45	38.07	38.38	37.88	37.57	37.31	38.08
Oats	31.20	30.55	30.07	31.04	31.52	32.00	30.33
Flour and meal	30.27	25.63	24.94	25.02	24.37	24.42	24.53
Hay, straw, and alfalfa	12.38	12.46	12.35	12.33	12.45	12.54	12.73
Tobacco	12.14	10.92	11.09	10.84	10.67	10.68	10.38
Cotton	12.17	11.57	11.50	11.29	11.25	11.15	11.33
Citrus fruits	16.68	16.22	15.40	15.04	15.63	16.00	15.64
Potatoes	18.77	18.24	18.20	17.87	17.96	17.71	18.10
Horses and mules	11.47	11.39	11.30	11.26	11.45	11.53	11.41
Cattle and calves	11.59	11.62	11.56	11.53	11.54	11.55	11.63
Sheep and goats	9.93	9.75	9.79	9.73	9.69	9.68	9.81
Hogs	9.61	9.51	9.61	9.55	9.50	9.55	9.62
Poultry	11.51	10.95	11.02	11.15	11.09	11.05	11.63
Eggs	11.58	11.18	11.19	11.27	11.22	11.22	11.62
Butter and cheese	12.90	12.18	12.37	12.65	12.49	12.61	12.10
Wool	12.48	12.20	11.63	12.37	12.53	12.78	11.59
Sugar, sirup, glucose, and molasses	28.98	27.68	27.54	27.53	27.87	28.00	29.44
Canned goods	24.78	23.13	23.09	22.92	22.88	23.02	23.06
Anthracite coal	48.28	47.53	47.85	48.45	49.06	49.17	50.70
Bituminous coal	49.27	50.45	50.80	51.28	51.72	52.37	52.44
Textiles	13.20	11.82	11.72	11.61	11.56	11.74	11.55
Lumber, timber, box shooks, staves, and headings	27.04	26.03	26.31	26.76	26.30	26.29	26.43

Division of Statistical and Historical Research. Compiled from reports of the Interstate Commerce Commission.

[1] Subject to revision.

TABLE 553.—*Freight rates, ocean: Wheat, per bushel to the United Kingdom from the United States, Canada, Argentina, India, and Australia, 1913, 1925, and 1926*

Month	United States										Canada [5]		Argentina			India			Australia		
	North Atlantic ports [1]			New York [2]			New Orleans [3]		North Pacific ports [4]												
	1913	1925	1926	1913	1925	1926	1925	1926	1925	1926	1925	1926	1913	1925	1926	1913	1925	1926	1913	1925	1926
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Jan	10	10	9	9	8	9	12	11	22	22	9	9	14	15	10	12	17	14	24	30	26
Feb	10	10	6	6	7	6	12	11	23	19	10	7	16	13	8	12	17	13	22	31	20
Mar	9	9	6	6	6	5	12	11	22	17	9	7	14	10	9	12	16	12	22	26	17
Apr	8	9	6	6	5	5	12	10	22	17	9	7	12	10	11	11	15	10	20	23	16
May	8	9	7	7	5	7	12	10	22	19	9	9	11	10	11	11	13	9	20	23	18
June	7	6	8	5	5	6	12	12	21	19	7	9	8	8	12	11	12	12	20	20	16
July	8	7	10	5	5	6	12	15	20	20	8	9	9	9	17	12	12	13	20	18	26
Aug	9	7	11	5	5	7	12	12	21	20	8	9	10	11	17	12	14	12	19	23	26
Sept	8	8	12	4	7	10	12	12	21	22	8	12	8	8	18	11	16	13	19	26	26
Oct	7	9	19	5	9	17	12	20	20	27	10	18	6	9	26	10	15	16	21	26	29
Nov	7	9	21	5	9	22	12	26	21	30	11	24	6	12	31	11	15	21	21	26	34
Dec	6	10	13	4	10	13	12	15	23	28	10	14	6	13	25	10	14	19	20	27	34
Average	8	9	11	6	7	9	12	14	22	22	9	11	10	11	16	11	15	14	21	25	24

Division of Statistical and Historical Research. Compiled from reports of the International Institute of Agriculture, except as otherwise indicated. The above rates were originally quoted in shillings; conversions made on the basis of the average monthly rate of exchange, except when exchange was at par.

[1] Average of North Atlantic ports, including New York.
[2] New York to Liverpool.
[3] From U. S. Shipping Board.
[4] Average of North Pacific ports.
[5] Rates from April to November, 1926, are from port of Montreal to Liverpool; rates for other months in 1926 and for all of 1925 are from Atlantic ports of Canada to United Kingdom.

TABLE 554.—*Fertilizer and fertilizer materials: Production and value, in the United States, 1923–1925*

Item	Quantity			Value		
	1923	1924	1925	1923	1924	1925
Fish scrap, dried and acidulated:[1]	*Short tons*	*Short tons*	*Short tons*	*Dollars*	*Dollars*	*Dollars*
Chesapeake	30,780	9,565	----	----	----	----
North Atlantic coast	42,745	12,975	----	----	----	----
North Carolina	10,150	12,790	----	----	----	----
Florida	5,015	5,588	----	----	----	----
Texas	770	1,033	----	----	----	----
Georgia	1,925	4,000	----	----	----	----
Total	91,385	45,951	----	----	----	----
Lime sold for agricultural purposes:						
Alabama	----	----	(2)	----	----	(2)
California	(2)	3,251	7,691	(2)	44,992	49,281
Connecticut	(2)	(2)	(2)	(2)	(2)	(2)
Indiana	4,926	5,157	9,426	42,889	35,622	43,874
Kentucky	(2)	----	(2)	(2)	----	(2)
Maine	7,678	8,166	(2)	38,256	40,424	(2)
Maryland	41,109	40,628	50,605	374,125	355,776	412,777
Massachusetts	3,960	4,928	7,284	11,042	17,995	25,038
Michigan	(2)	(2)	100	(2)	(2)	1,000
Missouri	1,014	(2)	669	10,978	(2)	5,663
New Jersey	(2)	----	----	(2)	----	----
New York	3,668	3,988	3,902	25,559	30,215	33,696
Ohio	17,497	19,686	26,004	127,758	134,943	188,236
Pennsylvania	112,011	116,966	129,834	838,010	883,225	958,411
Tennessee	1,325	791	(2)	11,591	5,407	(2)
Texas	984	(2)	----	7,498	(2)	----
Vermont	1,571	829	976	10,784	4,277	4,640
Virginia	21,294	19,906	28,053	153,152	130,571	190,475
West Virginia	16,719	18,289	18,877	112,374	122,594	123,091
Wisconsin	(2)	(2)	(2)	(2)	(2)	(2)
Other States[3]	6,795	5,751	15,555	58,503	58,473	92,987
Total	240,551	[4] 248,336	298,976	1,825,519	[4] 1,864,514	2,129,169
Lime, calcareous marl and peat for fertilizer:						
Calcareous marl, sold	99,410	72,710	68,670	328,932	225,383	187,839
Hydrated lime, sold	131,443	128,410	166,965	1,176,637	1,160,822	1,384,651
Limestone, pulverized, sold	1,278,770	1,352,600	1,954,480	2,160,249	2,046,860	2,880,589
Peat, produced	57,907	55,196	[5] 53,112	351,641	387,319	[5] 369,000
Total	1,567,530	1,608,916	2,243,227	4,017,459	3,820,384	4,822,079
Phosphate rock, sold or used:						
Florida—	*Long tons*	*Long tons*	*Long tons*			
Hard rock	199,516	143,115	171,649	1,071,675	629,579	707,933
Soft rock	----	----	----	----	----	----
Land pebble	2,348,137	2,289,466	2,758,315	7,987,752	7,387,897	8,081,137
Total	2,547,653	2,432,581	2,929,964	9,059,427	8,017,476	8,789,070
South Carolina—						
Land rock	----	----	2,147	----	----	8,051
Tennessee—						
Brown rock	[6] 427,799	[6] 375,260	[7] 477,077	[6] 2,335,262	[6] 1,958,272	[7] 2,429,059
Blue rock	919	21,378		5,647	81,766	
Total	[6] 428,718	[6] 396,638	[7] 477,077	[6] 2,340,909	[6] 2,040,038	[7] 2,429,059
Other States	30,335	38,570	72,631	175,713	194,569	319,498
Total phosphate rock	3,006,706	2,867,789	3,481,819	11,576,049	10,252,083	11,545,678
Pyrites produced	181,628	160,096	170,081	661,000	645,262	650,448

Division of Statistical and Historical Research. Compiled from annual reports of the American Fertilizer Handbook; Bureau of Mines, and the Geological Survey. Figures for earlier years appear in previous issues of the Yearbook.

[1] The northern scrap is mostly acid, while that of the Chesapeake is dry scrap; in other districts acid and dried are produced in about equal quantities.
[2] Included in "Other States."
[3] Porto Rico included, 1923–1925, and Hawaii, 1924–25.
[4] Totals include some chemical lime in Wisconsin and nonspecified States.
[5] Production for all purposes. Peat produced for agricultural purposes represented 99.6 per cent of total production in 1924 and 94.4 per cent in 1923.
[6] Includes brown rock from Kentucky.
[7] Blue and brown rock from Tennessee and brown rock from Kentucky.

TABLE 555.—*Fertilizer materials: Average wholesale price and average value at mine, by class, 1921–1926*

Material	Unit	1921	1922	1923	1924	1925	1926
Average wholesale price:		*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Ammonia sulphate, domestic spot	100 pounds	2.42	3.01	3.18	2.71	2.89	2.65
Blood, dried, 12 per cent ammonia[1]—							
New York	Short ton	39.84	49.68	50.28	41.76	[2] 60.32	[2] 62.40
Chicago	do	-------	50.64	50.64	42.12	-------	-------
Fish scrap[1]—							
Dried, 11 per cent ammonia, 14 per cent bone phosphate, f. o. b. fish factory.	do	36.16	40.12	45.18	46.94	[3] 50.01	[3] 46.38
Wet, acidulated, 6 per cent ammonia, 3 per cent phosphoric acid, f. o. b. fish factory.	do	17.10	19.26	22.74	23.34	24.78	22.08
Soda, nitrate, spot 95 per cent, bags	100 pounds	2.50	2.54	2.51	2.49	2.59	2.55
Cottonseed meal, 7 per cent ammonia, f. o. b. mill.	Short ton	32.67	39.50	39.67	37.33	34.46	28.00
Tankage, concentrated, 14 per cent, Chicago.[1]	do	31.64	45.36	45.36	40.60	43.12	46.20
Phosphate rock—							
Tennessee, f. o. b. Mount Pleasant—							
75 per cent guaranteed	Long ton	8.90	6.90	7.50	6.65	6.19	5.56
72 per cent	do	-------	5.54	5.50	4.65	5.19	5.00
Florida—							
Land pebble, 68 per cent	do	5.90	3.11	3.05	2.34	2.45	3.18
High-grade rock, 77 per cent	do	12.02	8.58	7.60	6.75	6.05	6.50
High-grade rock, 75 per cent	do	8.74	6.23	5.17	4.18	-------	-------
Potash—							
Sulphate of, 90–95 per cent, bags	Short ton	-------	44.41	42.66	42.81	45.85	46.06
Muriate of, 80–85 per cent	do	-------	34.54	33.34	32.09	34.65	35.12
Potash-magnesia sulphate (double manure salt), 48–53 per cent, bags.	do	-------	-------	-------	-------	26.35	26.48
Manure salts, 20 per cent minimum K_2O, bulk.	do	15.40	10.28	10.44	9.95	10.95	11.79
Kainit, 12.4 per cent K_2O, bulk	do	9.67	6.87	6.89	6.91	7.82	8.30
Average value at the mine:							
Pyrites	do	4.53	3.97	3.64	4.03	3.82	-------
Phosphate rock—							
Florida—							
Hard rock	Long ton	10.28	6.96	5.37	4.40	4.12	-------
Soft rock	do	4.56	7.85	-------	-------	-------	-------
Land pebble	do	5.38	3.76	3.40	3.23	2.93	-------
Average of total sales	do	5.86	4.05	3.56	3.30	3.00	-------
South Carolina hard rock	Long ton	-------	5.50	-------	-------	3.75	-------
Tennessee—							
Brown rock	do	6.60	5.97	[4] 5.46	[4] 5.22	[5] 5.09	-------
Blue rock	do	5.81	5.71	6.14	3.82		-------
Average of total sales	do	6.53	5.96	5.46	5.14	5.09	-------
Other States	Long ton	4.11	4.39	5.79	5.04	4.40	-------
Average value phosphate rock	do	5.95	4.34	3.85	3.57	3.32	-------

Division of Statistical and Historical Research. Prices compiled from weekly quotations, Oil, Paint, and Drug Reporter. New York prices, except as otherwise stated. Values from annual reports of the Geological Survey and Bureau of Mines. Figures for earlier years appear in previous issues of the Yearbook.

[1] Converted from price of ingredient content.
[2] 16 per cent ammonia.
[3] 11 per cent ammonia, 15 per cent bone phosphate.
[4] Brown rock of Kentucky included.
[5] Blue and brown rock of Tennessee and Kentucky.

TABLE 556.—*Fertilizers and fertilizer materials: Production, consumption, imports and exports, United States, 1921–1925*

Item	1921	1922	1923	1924	1925
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Sulphate of ammonia:					
Production	358,500	476,761	603,363	569,622	[1] 639,019
Consumption [2]	248,583	317,274	435,209	443,771	[1] 527,714
Nitrate of soda, imports for consumption	379,173	542,464	891,679	986,638	1,112,226
Sulphuric acid:					
Production (50° Baumé) [3]	1,319,582	1,423,917	1,631,216	1,[illegible]76,544	1,810,422
Imports for consumption [4]	2,939	1,447	11,754	7,734	18,191
Exports	6,407	6,235	4,122	5,636	3,769
Made and consumed [3]	1,143,850	1,589,809	1,365,883	1,782,816	2,094,009
Acid phosphate:					
Production [3]		2,788,207	3,367,220	3,250,498	3,846,401
Sales [3] [5]		3,062,633	3,037,393	3,381,202	3,550,762
Potash:					
Production, domestic	25,485	25,176	39,029	43,719	51,565
Sales, domestic	10,337	22,028	35,164	37,492	52,823
Imports for consumption—					
Kainit	77,365	169,287	187,833	175,513	204,767
Manure salts	43,286	218,406	301,721	258,998	430,340
Muriate of potash	79,642	179,484	151,757	144,623	180,351
Sulphate of potash	12,459	64,534	71,390	84,780	77,226
Other potash-bearing substances [6]		5,682	32,228	46,946	29,002
Total imports for consumption	212,752	637,393	744,929	710,860	921,686

Division of Statistical and Historical Research. Compiled from annual reports of the Bureau of the Census, Bureau of Mines, Bureau of Foreign and Domestic Commerce, Geological Survey, and the American Fertilizer Handbook. Figures for earlier years appear in previous issues of the Yearbook.

[1] Subject to revision.
[2] Production plus imports for consumption minus domestic exports.
[3] Fertilizer establishments only.
[4] Imports for all purposes.
[5] Quantity sold as acid phosphate or used in the manufacture of other fertilizers.
[6] Includes ashes (wood), beet root, other potash-bearing substances (alunite, leucite, etc.) used for fertilizer.

TABLE 557.—*Guano: Imports into the United States, 1909–1926*

Year ended June 30—	Quantity	Value	Year ended June 30—	Quantity	Value
	Tons	*Dollars*		*Tons*	*Dollars*
1909	36,909	580,334	1919	8,218	293,425
1910	52,330	845,765	1920	18,796	1,550,098
1911	29,516	593,306	1921	37,570	3,158,064
1912	34,706	684,658	1922	1,305	48,875
1913	19,075	340,915			
			1923	(1)	(1)
1914	21,887	755,833	1924	[2] 4,982	[2] 191,659
1915	20,945	534,391	1925	24,556	737,896
1916	15,837	425,377	1926 [3]	17,855	692,124
1917	3,563	73,398			
1918	10,096	287,440			

Division of Statistical and Historical Research. Compiled from Foreign Commerce and Navigation of the United States, 1913-1918 and Monthly Summary of Foreign Commerce of the United States, June issues, 1921-1926.

[1] Included in All other fertilizers.
[2] Beginning Jan. 1, 1924.
[3] Preliminary.

TABLE 558.—*Fertilizer materials: Imports into the United States, 1912–1926*

Year ended June 30—	Bone dust and bone ash[1]		Kainit		Manure salts[2]	
	Quantity	Value	Quantity	Value	Quantity	Value
	Tons	*Dollars*	*Tons*	*Dollars*	*Tons*	*Dollars*
1912	33, 864	830, 616	485, 132	2, 399, 761	192, 738	1, 814, 071
1913	33, 337	801, 713	466, 795	2, 154, 977	171, 802	1, 794, 058
1914	41, 450	1, 034, 636	541, 846	2, 579, 619	261, 342	2, 767, 241
1915	23, 428	584, 748	79, 004	444, 760	66, 062	760, 699
1916	20, 466	524, 153	64	1, 795	2, 271	41, 825
1917	14, 305	385, 541			324	7, 794
1918	8, 511	286, 764			190	8, 872
1919	4, 138	117, 690				
1920	7, 340	306, 301	274, 761	5, 655, 660	249, 348	8, 319, 620
1921	27, 413	1, 317, 876	204, 834	4, 882, 974	123, 273	4, 164, 817
1922	18, 234	495, 445	83, 571	585, 338	81, 442	957, 443
1923	52, 933	1, 380, 413	168, 514	1, 048, 054	[3] 244, 760	2, 398, 098
1924	66, 820	1, 783, 534	181, 288	1, 080, 132	268, 203	2, 988, 634
1925	35, 908	730, 880	142, 888	855, 277	344, 200	3, 293, 254
1926 [4]	55, 152	1, 377, 389	190, 955	1, 252, 942	417, 986	4, 238, 520

Year ended June 30—	Ammonia sulphate		Potash			
			Muriate		Sulphate	
	Quantity	Value	Quantity	Value	Quantity	Value
	Tons	*Dollars*	*Tons*	*Dollars*	*Tons*	*Dollars*
1912	65, 906	4, 143, 417	215, 957	7, 235, 718	44, 476	1, 826, 836
1913	54, 089	3, 655, 413	201, 220	6, 782, 056	42, 745	1, 753, 485
1914	74, 444	4, 888, 563	237, 886	7, 915, 523	45, 139	1, 897, 740
1915	57, 048	3, 208, 152	102, 732	3, 666, 118	21, 852	1, 071, 761
1916	19, 610	1, 371, 007	2, 130	461, 431	2, 423	197, 808
1917	8, 176	647, 271	606	174, 806	661	20, 538
1918	3, 983	467, 999	723	195, 154	135	19, 837
1919	1, 964	278, 469	1, 677	201, 307	137	23, 304
1920	2, 587	343, 107	110, 324	11, 038, 173	6, 356	1, 073, 322
1921	2, 537	226, 300	49, 911	5, 290, 196	12, 081	1, 659, 998
1922	6, 356	314, 286	131, 423	5, 549, 580	45, 280	2, 085, 348
1923	1, 785	116, 686	150, 461	4, 759, 134	51, 776	2, 109, 966
1924	5, 848	337, 032	119, 605	3, 828, 891	68, 399	2, 685, 129
1925	21, 188	1, 198, 428	154, 447	4, 737, 224	67, 292	2, 553, 248
1926 [4]	13, 340	724, 067	181, 015	5, 801, 061	61, 165	2, 409, 474

Division of Statistical and Historical Research. Compiled from Foreign Commerce and Navigation of the United States, 1913–1918 and Monthly Summary of Foreign Commerce of the United States, June issues, 1921–1926.

[1] Classified in 1924–1926 as "Bone phosphate and other phosphate material."
[2] Classified as "Manure salts and other potash-bearing substances."
[3] Includes "Other potash-bearing substances" amounting to 20,734 tons and valued at $238,651.
[4] Preliminary.

TABLE 559.—*Federal-aid highways completed and under construction*

State	Projects completed and final payment made, year ended June 30, 1926			Projects under construction June 30, 1926 [1]		
	Miles	Total cost	Federal aid	Miles	Estimated cost	Federal aid allotted
Alabama	686.5	$12,256,313.63	$5,862,787.23	207.3	$5,058,42[illegible].96	$2,374,991.75
Arizona	116.0	1,369,744.82	847,652.41	81.4	1,401,980.83	945,372.27
Arkansas	274.1	5,054,354.42	2,286,516.62	308.8	4,758,782.28	2,248,758.94
California	163.2	4,796,420.91	2,284,342.69	319.9	11,715,699.34	5,695,750.56
Colorado	93.8	2,029,200.70	1,059,473.84	214.4	4,456,058.36	2,192,681.79
Connecticut	15.5	865,927.90	281,217.14	48.0	3,259,571.40	921,363.03
Delaware	17.2	636,492.48	285,474.95	28.2	1,115,536.81	470,577.90
Florida	36.6	873,406.54	418,874.35	279.7	9,925,038.28	4,645,765.56
Georgia	315.7	4,635,204.60	2,257,871.40	656.9	12,261,322.41	6,036,376.25
Idaho	124.6	1,666,521.34	1,066,780.44	162.5	2,958,753.24	1,789,391.33
Illinois	141.5	4,106,130.76	1,979,919.46	213.5	6,290,805.18	3,030,099.67
Indiana	112.2	3,310,253.22	1,609,669.51	428.0	15,956,296.59	7,437,580.19
Iowa	117.9	1,790,090.19	818,809.11	648.7	9,830,045.68	4,770,528.91
Kansas	329.2	6,426,905.87	2,835,215.93	651.9	11,703,240.93	4,616,421.11
Kentucky	173.4	5,905,381.82	2,286,087.66	280.0	5,631,422.97	2,666,402.84
Louisiana	128.3	1,891,167.71	864,869.13	161.2	3,435,673.08	1,667,428.72
Maine	22.2	573,271.45	284,637.06	67.3	2,364,417.18	854,849.24
Maryland	128.9	2,792,436.20	1,263,608.07	30.7	513,398.28	252,643.43
Massachusetts	73.9	4,306,101.49	1,189,599.34	46.5	3,548,227.96	996,569.84
Michigan	350.4	9,763,239.98	4,498,735.39	246.5	10,129,758.58	4,599,288.88
Minnesota	460.7	6,756,300.06	2,847,474.52	591.3	9,330,294.00	3,493,000.00
Mississippi	325.6	4,853,802.73	2,425,831.37	360.6	6,629,582.39	3,283,796.56
Missouri	424.3	11,621,010.35	5,516,603.42	563.6	20,568,938.77	8,128,296.60
Montana	133.3	1,244,383.40	1,015,942.74	132.7	1,749,936.25	1,194,956.27
Nebraska	197.7	2,227,027.26	1,084,679.02	1,352.1	13,349,102.13	6,510,012.74
Nevada	181.5	2,640,720.82	2,042,634.81	346.1	3,250,322.24	2,798,063.96
New Hampshire	29.5	826,870.74	391,223.20	26.0	866,830.33	396,091.78
New Jersey	71.2	4,384,943.56	1,277,662.22	31.6	6,814,161.67	2,519,262.44
New Mexico	345.7	3,680,338.59	2,425,586.77	100.4	1,349,543.87	873,541.09
New York	365.5	14,626,510.12	5,682,880.66	567.4	32,340,520.00	8,967,680.20
North Carolina	138.1	5,904,969.06	2,430,883.35	190.2	8,035,569.05	3,484,782.13
North Dakota	275.6	1,484,047.58	762,929.31	750.9	5,408,990.29	2,744,108.72
Ohio	173.0	6,127,280.09	2,126,793.10	353.5	11,554,505.96	4,475,373.81
Oklahoma	326.7	7,460,925.39	3,487,108.81	97.4	2,893,119.44	1,354,980.82
Oregon	144.6	2,639,689.72	1,450,850.16	126.3	3,262,909.64	1,794,020.71
Pennsylvania	338.5	18,311,315.61	5,338,708.07	529.7	25,913,665.91	7,325,756.54
Rhode Island	21.9	1,380,119.89	439,140.97	28.5	1,531,802.80	427,155.00
South Carolina	246.0	3,857,292.06	1,645,055.39	240.8	6,332,252.88	2,883,133.47
South Dakota	733.3	5,376,988.52	2,613,947.97	633.3	3,716,153.62	1,864,529.03
Tennessee	282.1	7,835,490.59	3,544,504.25	248.4	7,630,941.58	3,490,104.05
Texas	1,013.1	15,062,702.65	6,382,314.60	907.4	19,070,379.25	8,428,039.53
Utah	123.3	1,994,018.62	1,279,603.77	154.0	1,688,956.94	1,269,611.66
Vermont	26.7	1,226,868.13	564,805.06	34.6	1,837,974.09	723,688.66
Virginia	329.3	8,890,529.43	4,113,729.91	185.7	6,468,112.20	2,824,006.82
Washington	141.9	3,726,007.45	1,665,697.59	41.1	3,309,677.73	1,653,600.09
West Virginia	66.2	2,130,515.58	910,769.32	137.1	5,291,716.29	2,060,920.93
Wisconsin	140.4	3,049,367.28	1,473,065.11	313.4	6,916,454.17	3,369,475.16
Wyoming	151.5	2,118,483.23	1,301,790.38	213.7	2,635,904.29	1,663,408.02
Hawaii				15.9	1,050,897.93	312,635.18
Total	10,628.3	226,552,043.54	100,524,357.58	14,355.1	347,113,666.05	148,527,474.03

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[1] Includes 3,393.8 miles of practically completed projects.

TABLE 560.—*Mileage of road in State highway systems at end of 1925*

State	1925 year ends	Grand total mileage in State highway system	Unimproved and earth, partially graded	Earth to established grade and drained	Total miles of road surfaced	Sand-clay	Gravel, etc., untreated	Water-bound macadam, untreated	Surface-treated macadam and gravel	Bituminous macadam by penetration	Sheet asphalt	Bituminous concrete	Portland cement concrete [1]	Block pavements: Brick	Block pavements: Asphalt	Block pavements: Wood	Block pavements: Stone
Alabama	Dec. 31	3,953.5	2,076.2	44.3	1,833.0	591.5	1,012.2	31.6	25.3	[2] 36.8	5.7	93.6	36.1			0.2	
Arizona	do	2,044.4	278.1	313.8	1,452.5		1,265.2				15.0	31.7	140.6				
Arkansas [3]	do	8,295.0	3,860.0	640.0	3,795.0	2,897.0	183.0		50.0	156.0	32.0	271.0	206.0				
California	do	6,591.4	2,534.3	[4] 673.8	3,383.3		[4] 862.0	[4] 61.0		325.4		390.2	1,744.7				
Colorado	do	8,932.8	217.4	5,258.6	3,456.8		3,231.7					5.9	219.2				
Connecticut	June 30	1,871.9		146.9	1,725.0		67.8		1,030.3	205.1		125.2	294.9	1.7			
Delaware	Dec. 21	505.7			505.7			1.0	1.2	18.1		2.3	476.7	6.4			
Florida	do	4,490.0	2,275.0	20.3	2,194.7	440.4	8.3	[5] 134.8	667.8	177.6	206.3	32.9	131.6	337.0	58.0		
Georgia	do	6,231.7	3,629.4	129.8	2,472.5	1,542.2	456.9	43.0	47.2	118.6	34.9	9.2	219.9	.6			
Idaho	do	4,627.3	2,081.4	349.5	2,196.4	83.3	1,582.8	404.0			5.4	77.5	43.4				
Illinois	do	4,819.5	203.9	447.4	4,168.2		6.1	.6		5.7	4.6	8.7	4,051.1	91.4			
Indiana	do	3,935.6	14.7	60.9	3,860.0		1,629.8	999.7	28.6	172.9		26.0	933.8	68.6		.6	
Iowa	do	6,674.1	1,848.7	1,796.0	3,029.4		2,460.8						535.3	33.3			
Kansas	do	7,386.0	5,931.4	491.8	962.8	81.0	201.1			94.9		3.0	450.5	132.3			
Kentucky	do	8,000.0	5,186.2	541.5	2,272.3		603.9	314.5	952.6	223.3		13.8	159.0	5.2			
Louisiana	do	7,000.0	3,178.3		3,821.7		3,673.5		87.1	20.2		12.4	13.5	15.0			
Maine	do	1,459.4	240.7		1,218.7	7.3	471.3		487.1	197.1			55.9				
Maryland	Sept. 30	2,429.0			2,429.0		423.3		1,025.0		78.1	30.2	864.7	7.7			
Massachusetts	Dec 31	1,541.8		12.7	1,529.1				495.6	655.5		192.7	[6] 182.6	.8		.1	1.8
Michigan	do	6,706.6		680.8	6,025.8		3,610.4	3.5	642.3	76.6	.2	183.6	[7] 1,502.7	6.5			
Minnesota	Nov. 1	6,954.5	98.6	877.3	5,978.6	151.2	5,151.5	14.8		8.0		67.8	560.2	12.6		12.5	
Mississippi	Dec. 31	[8] 5,500.9	2,534.2	277.0	2,689.7	5.4	2,391.5	10.7	49.4	4.9	6.7	13.9	188.0	19.2			
Missouri	do	7,640.0	2,788.3	2,250.3	2,601.4		1,481.4			94.4			[9] 1,017.0	8.6			
Montana	do	7,957.0	6,815.1	282.5	859.4		818.9		.6	5.5		2.3	32.1				
Nebraska	do	5,619.0	2,791.5	946.1	1,881.4	239.7	1,550.2		.6		2.6	8.2	60.6	19.5			
Nevada	do	2,996.7	1,928.6	194.5	873.6		791.4		[10] 10.0	22.2		3.2	46.8				
New Hampshire	do	[11] 2,081.2	297.5	15.8	1,767.9		791.4	53.9	727.3	120.2		62.6	12.5				
New Jersey	do	[12] 1,290.0		108.1	1,181.9		110.9	18.5	238.1	13.7	52.2	229.0	497.8	4.1	2.7	6.3	8.6
New Mexico	do	9,159.0	7,343.5	200.0	1,615.5		1,544.2					.7	70.6				
New York	do	[13] 13,900.0	4,266.0	8.1	9,625.9		148.7		2,301.7	4,054.8		198.7	[14] 2,631.7	262.6	23.4	.6	3.7
North Carolina	do	6,432.2		1,120.7	5,311.5	2,286.3	329.1		606.1	137.1		963.2	942.9	46.8			
North Dakota	do	6,174.0	3,051.3	2,319.2	803.5		796.3						7.2				
Ohio	do	10,784.0		1,282.4	9,501.6		3,000.2	1,307.2	200.0	1,821.7	[15] 63.8	[15] 228.9	1,467.4	[16] 1,412.4			
Oklahoma	do	5,589.0	4,215.0	25.6	1,348.4		750.0		38.6			73.0	454.5	32.3			
Oregon	do	4,446.3	1,102.9	335.0	3,008.4		2,113.7					695.2	199.5				

Pennsylvania.........do.....	10,827.8		3,172.3	7,655 5		430.8		2,777.8	366.8	193.4	287.4	3,227.9	[17] 358.7	7.1	3.2	2.4
Rhode Island...... Nov. 30	768 4	362.6		405.3				124.5	95.9	5.5	134.4	45.5				
South Carolina.... Dec. 31	[18] 4,951.0	1,688.4	41.8	3,220.8	2,643.6	246.9	27.3	32.7	11.2	65.9	49.0	144.2				
South Dakota........do.....	5,918.0	[19] 1,724.9	2,170.1	2,023.0	20.5	2,001.3						1.2				
Tennessee............do.....	4,644.4	1,869.8	175.2	2,599.4		850.7	[20] 860.5	246.3	446.6	19.6	58.3	117.4				
Texas................do.....	16,668.0	7,659.9	1,054.1	7,954.0	613.4	4,760.3	245.4	1,289.2	395.3	25.0	75.6	486.7	63.1			
Utah.................do.....	3,132.3	1,434.5	639.8	1,058.0		806.7				10.5	41.9	198.9				
Vermont..............do.....	4,466.0	1,398.6		3,067.4		2,914.8	9.0	75.8	29.9			37.9				
Virginia.............do.....	4,920.4	1,102.4	258.1	3,559.9	[21] 921.8	710.2		1,028.5	456.9	8.8	3.2	430.5				
Washington...........do.....	3,266.0	558 0	166.0	2,542.0		1,910.0		40 0		2.0	40 0	536.0	14.0			
West Virginia........do.....	3,664.0	1,719.3	682 0	1,262.7		164.9	117.6		[22] 388.6	.7	74.9	365.1	150.9			
Wisconsin [23].........do.....	10,264.5	822.1	1,464.4	7,978.0	152.0	5,336.4	145.7	522.4				1,821.5				
Wyoming..............do.....	3,143.3	1,797.5	544.0	801.8		755.5		8.1	27.1			11.1				
Total...............	270,653.6	92,926.2	32,218.5	145,508.9	12,676.6	64,408.0	4,804 3	15,857.8	10,984.6	838.9	4,821.3	27,874.9	3,111.3	91.2	23.5	16.5

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[1] Superhighways (four or more lane concrete) and dual type roads included below as noted.
[2] Includes 4.8 miles of patent "rawhide" road.
[3] System increased by 1,577 miles of various types from county roads.
[4] Estimated, as State does not segregate mileage of earth, gravel, and waterbound macadam.
[5] Includes 9.7 miles of rock base only.
[6] Includes 3.7 miles dual type (two strips concrete 10 feet wide and 8 feet of bituminous macadam in center).
[7] Includes about 13 miles of superhighway 128 feet wide, two-lane concrete pavement 44 feet wide separated by 40-foot width electric railway tracks.
[8] System increased by 102 miles from county roads.
[9] Includes 205.5 miles, 9 feet wide concrete and 7 feet wide gravel.
[10] Oiled sand.
[11] Excludes 60.2 miles built by compact with towns of over 2,500 population; also system increased (by legislation) 652.1 miles of State-aid roads and 61.6 miles from counties.
[12] System increased by 259.7 miles from county roads.
[13] System increased by legislature, adding 2,640 miles (mostly unimproved) from county roads.
[14] Includes 59.9 miles dual type (24 and 27 feet wide).
[15] Partial estimate as sheet asphalt reported with bituminous concrete.
[16] Excludes Cuyahoga County four-lane super highway; not State road.
[17] Includes 12.9 miles dual type (10 to 20 foot center width surface treated macadam with two outside 10-foot widths of reinforced cement concrete).
[18] System increased by legislature with 224.6 miles of unimproved county roads.
[19] Earth road oiled for 4 miles.
[20] Includes 12.4 miles of stone base only.
[21] Includes 643.1 miles of selected top-soil mostly sand-clay.
[22] Includes 44.7 miles of Kentucky rock (asphalt) road.
[23] Data based on new surveys made.

TABLE 561.—*Mileage of county and local roads at the end of 1925*

State	Grand total mileage rural roads other than State highway system	Unimproved and earth partially graded	Earth to established grade and drained	Total miles of road surfaced	Sand-clay	Gravel, etc., untreated	Water-bound macadam, untreated	Surface-treated macadam and gravel	Bituminous macadam by penetration	Sheet asphalt	Bituminous concrete	Portland cement concrete	Block pavements				Miscellaneous
													Brick	Stone	Wood	Asphalt	
Alabama	57,587.3	38,319.0	7,540.8	11,727.5	6,199.9	4,742.1	426.9	185.3	118.0	28.1	14.4	12.8					
Arizona	20,537.7	16,990.2	1,809.0	1,738.5	648.3	761.9					67.1	261.2					
Arkansas	66,570.0	62,604.5	1,281.0	2,704.5	150.2	2,224.9	162.2	28.4	83.7	9.4	35.9	9.8					
California [1]	72,606.0	28,034.0	29,953.0	14,619.0	[2] 2,380.0	7,110.4	941.8	175.6	1,206.1		807.1	1,998.0					
Colorado	58,905.7	24,878.4	28,884.3	5,143.0		5,108.5					34.5						
Connecticut	11,474.1	8,010.5	2,579.1	884.5		8.4	135.4	564.3	100.8	4.0	19.7	51.9					
Delaware	3,290.3	1,777.1	1,237.0	276.2		50.0	28.4	151.3	21.1		20.8	4.1			0.5		
Florida	25,773.4	15,000.2	3,124.1	7,649.1	3,429.0	1,381.4	627.2	501.8	389.6	611.7	47.3	146.6	389.5			125.0	
Georgia	91,660.5	51,408.4	24,014.4	16,237.7	11,866.7	3,203.1	182.5	114.3	274.2	36.7	70.0	490.2					
Idaho	30,775.0	8,155.0	12,700.0	9,920.0		9,315.0	475.0		60.0								70.0
Illinois	91,506.5	79,746.5	669.0	11,091.0		7,075.7	2,628.5	138.0	64.1	28.4	34.0	962.3	152.0		8.0		
Indiana [3]	69,195.3	24,930.5		44,264.8		30,908.9	11,744.8	235.8	267.0		162.1	796.8	149.4				
Iowa	96,247.0	92,466.0	824.5	2,956.5		2,954.5						2.0					
Kansas	120,577.8	112,783.1	5,562.6	[4] 2,232.1	478.6	668.7	245.8	63.2	127.8	1.5	6.8	552.9	86.8				
Kentucky	60,704.0	45,526.0	219.2	14,958.8	70.0	3,173.0	10,648.9	845.3	23.5	56.0		36.1	4.0		5.0		97.0
Louisiana	32,803.0	31,441.2		1,361.8		1,350.0			3.2		5.6		3.0				
Maine	19,306.1	16,237.4	8.9	3,059.8	73.7	2,910.7	9.9	47.9	11.7	1.5	2.5	1.8		0.1			
Maryland	12,439.0	8,600.0	1,579.0	2,260.0	414.0	830.0	[5] 442.0	444.0	70.0			60.0					
Massachusetts	17,540.6	558.3	10,623.1	6,359.2		2,168.6	141.1	2,785.7	922.2	.7	275.1	48.6	4.8	10.5	1.9		
Michigan	70,576.7	54,253.6	835.1	15,488.0	67.5	12,858.9	1,240.6	365.7	119.0	2.0	93.4	505.4	3.6				231.9
Minnesota	101,125.7	80,736.3	1,983.4	18,406.0	3,815.1	14,349.0	75.4	67.4		8.7	21.9	66.0	2.5				
Mississippi	50,607.1	42,400.4	986.8	7,219.9	407.4	6,464.4	39.5	71.6	182.6		6.0	45.3	3.1				
Missouri	102,860.0	84,789.0	10,014.0	8,057.0	1,872.0	3,426.0	154.0	2,297.0	147.0		49.0	112.0					
Montana	59,219.9	58,889.9		330.0		330.0											
Nebraska	81,549.5	77,137.6	3,791.7	620.2	342.8	260.1	.7		4.4		2.0	6.8	3.4				
Nevada	20,174.0	18,173.0	1,623.0	378.0		377.0		1.0									
New Hampshire	11,720.6	11,595.0		125.6		123.0			2.6								
New Jersey [6]	16,431.8	17.7	9,987.6	6,426.5		2,647.6	1,312.6	512.8	783.7	270.6	488.9	290.3	35.9	81.3	.4	2.4	
New Mexico	39,135.6	37,752.8	558.0	824.8	583.0	241.8											
New York [7]	67,973.0	50,794.9	440.7	16,737.4		5,513.4	3,827.9	3,637.4	3,023.1	16.5	17.3	636.8	65.0				

North Carolina	61,716.0	33,111.0	13,900.0	14,705.0	11,140.0	2,751.0	255.0	193.0		169.0	67.0	90.0	40.0				
North Dakota	100,324.4	99,137.8	206.0	980.6		980.6											
Ohio	74,099.0	43,352.0		30,747.0		22,684.0	5,448.0		1,517.0	233.0		550.0	315.0				
Oklahoma	128,673.0	124,755.7	3,579.8	337.5		26.9	29.7	269.8			1.6	9.5					
Oregon	45,306.0	30,107.5	7,452.0	7,746.5		7,329.0					286.5	131.0					
Pennsylvania	81,931.0	62,755.0	7,874.0	11,302.0	1.0	5,223.0	4,275.0	65.0	434.0	1.0	412.0	382.0	509.0				
Rhode Island	1,606.0	438.5	796.3	371.2		113.0	48.2	121.0	75.5	7.0	.5	3.0		3.0			
South Carolina	59,682.8	46,302.6	6,540.2	6,840.0	6,338.1	401.8	19.1	5.0		1.0	26.1	48.9					
South Dakota	110,983.1	105,361.8	4,642.1	984.2		984.2											
Tennessee	60,677.2	40,335.5	9,615.8	10,725.9		5,153.6	4,383.8	682.8	95.6	331.4	49.2	28.5			1.0		
Texas	151,017.0	136,925.4	1,931.0	12,160.6	1,500.0	9,810.8	307.8	148.0	243.2	81.4	45.4	24.0					
Utah	20,248.8	16,752.9	1,422.0	2,073.9	697.6	1,280.1	12.0	3.6	7.2		21.7	51.7					
Vermont [8]	10,408.0	8,241.0	554.0	1,613.0		1,613.0											
Virginia	54,160.0	43,762.0	4,176.0	6,222.0	3,410.0	1,102.0	804.0	798.0				108.0					
Washington	45,750.0	21,332.0	9,689.0	14,729.0		12,905.0		112.0		20.0	229.0	1,250.0	53.0				160.0
West Virginia	31,579.0	30,736.9	476.8	[9] 365.3		80.6	123.5	47.6	111.7	1.9							
Wisconsin	68,699.7	48,360.0		20,339.7	2,325.6	17,431.6	251.0					331.5					
Wyoming	43,432.5	35,551.7	7,775.6	105.2		104.7						.5					
Total	2,731,171.7	2,111,325.8	243,439.9	376,406.0	58,210.5	222,511.9	51,448.2	15,679.6	10,489.6	1,921.5	3,420.4	10,106.3	1,830.0	94.9	16.8	127.4	558.9

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[1] During year 1,577 miles of county roads were transferred to State highway system; about 370 miles were surfaced roads.
[2] Includes about 2,000 miles of sand-clay roads not previously reported.
[3] The decrease of about 7,000 miles from previously reported mileage due to a new survey by State maintenance department.
[4] Large increase in surfaced mileage, over 1924, due to corrections of survey.
[5] Includes 224 miles of traffic-bound loose rock road.
[6] During year 259.7 miles of county roads transferred to State highway system.
[7] Legislature transferred 2,640 miles of county roads to State highway system.
[8] Used data of 1921 as only available mileage.
[9] Surfaced mileage overstated in 1924; should have been 248 miles instead of 716.1 as reported.

Table 562.—*Gasoline taxes, 1925*

State	Gross tax assessed prior to deduction of refunds	Exemption refunds (deduct from gross tax)	Total tax earnings on fuel for motor vehicles	Disposition of total tax earnings: Collection costs	Disposition: Construction and maintenance on rural roads: State highways	Disposition: Construction and maintenance on rural roads: Local roads	Disposition: For other purposes	Tax rates, 1925: Cents per gallon: Jan. 1	Tax rates, 1925: Cents per gallon: Dec. 31	Tax rates, 1925: Date of rate change	Net gallons of gasoline taxed and used by motor vehicles	Estimated additional gallons (not taxed) used by motor vehicles
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*					
Alabama	2,140,802		2,140,802	9,461		[1] 2,131,341		2	2		107,040,092	
Arizona	1,035,551	179,600	855,951		427,976	427,975		3	3		28,531,686	
Arkansas [2]	3,230,559	280,199	2,950,360		1,357,360	[3] 1,593,000		4	4		73,759,002	
California	16,150,387	1,193,598	14,956,789	7,393	7,229,248	7,229,248	[4] 490,900	2	2		747,839,462	
Colorado	1,991,531	30,585	1,960,946		980,473	980,473		2	2		97,377,858	
Connecticut	1,908,809		1,908,809		1,908,809			1	2	July 1	122,230,292	
Delaware	350,580	8,499	342,081		342,081			2	2		17,104,050	
District of Columbia	896,568	6,970	889,598				[12] 889,598	2	2		44,479,898	
Florida	7,657,507		7,657,507	6,000	5,549,978	2,101,529		3	4	June 6	210,323,517	
Georgia	4,418,824		4,418,824	4,200	1,641,248	1,386,688	[5] 1,386,688	3	3½	Aug. 26	138,802,152	
Idaho	932,064	36,621	895,443	9,466	885,977			2	3	Mar. 1	30,809,320	
Illinois	None.							0	0	No tax.		530,534,340
Indiana	7,832,462	179,413	7,653,049	12,436	5,200,637	2,439,976		2	3	Apr. 1	272,980,870	
Iowa	3,568,184	63,069	3,505,115	5,520	1,151,144	2,302,289	[6] 46,162	0	2	Apr. 16	175,255,740	51,796,350
Kansas	3,000,253	95,059	2,905,194		2,905,194			0	2	May 1	145,259,690	52,911,710
Kentucky	3,041,560		3,041,560		3,041,560			3	[7] 3		101,385,318	
Louisiana	2,339,543		2,339,543		[8] 2,339,543			2	2		116,939,139	
Maine	1,283,874	15,526	1,268,348	5,596	[9] 1,262,752			1	3	July 11	56,513,741	
Maryland	2,022,986	45,950	1,977,036	2,500	[10] 1,579,629		[11] 394,907	2	2		98,851,313	
Massachusetts	None.							0	0	No tax.		274,615,025
Michigan	8,742,392	506,314	8,236,078	41,358	[12] 6,694,720	[13] 1,500,000		0	2	Feb. 1	411,803,894	19,856,370
Minnesota	3,989,282	125,342	3,863,940		3,863,940			0	2	May 1	199,464,097	57,908,930
Mississippi	2,494,274		2,494,274	1,800	[8] 1,224,976	[8] 1,203,715	[14] 63,783	3	3		83,142,469	
Missouri	4,234,070	74,955	4,159,115	23,429	4,135,686			2	2	Jan. 1	207,955,474	
Montana	674,710		674,710		101,207	371,090	[15] 202,413	2	2		33,735,497	
Nebraska	2,202,236	8,434	2,193,802	4,963	2,188,839			0	2	Apr. 1	109,690,122	26,570,900
Nevada	335,446	16,741	318,705		159,353	159,352		2	4	do	8,850,407	
New Hampshire	716,140	9,068	707,072		707,072			2	2		35,353,585	
New Jersey	None.							0	0	No tax.		249,638,220
New Mexico	537,356		537,356	26,868	[8] 510,488			1	3	Mar. 17	20,490,892	

New York	None.							0	0	No tax.		715, 256, 520
North Carolina	6, 238, 508	156, 130	6, 082, 378		6, 082, 378			3	4	Feb. 21	161, 371, 522	
North Dakota	649, 416	15, 000	634, 416		224, 095		15 410, 321	1	1		64, 941, 557	
Ohio	9, 133, 785	123, 835	9, 009, 950		9 4, 054, 478	8 2, 252, 487	16 2, 702, 985	0	2	Apr. 18	450, 497, 522	99, 560, 500
Oklahoma	5, 143, 517		5, 143, 517		3, 351, 898	1, 791, 619		2½	3	Mar. 23	176, 753, 177	
Oregon	3, 065, 151	156, 056	2, 909, 095	6, 553	2, 902, 542			3	3		96, 969, 835	
Pennsylvania	8, 352, 798		17 8, 352, 798		3, 136, 819	2, 105, 917	15 3, 110, 062	2	2		414, 096, 490	
Rhode Island	318, 357		318, 357		318, 357			0	1	Apr. 29	31, 835, 668	3, 576, 640
South Carolina	3, 870, 588	5, 185	3, 865, 403		2, 186, 152	1, 512, 889	15 156, 362	3	5	Mar. 23	83, 962, 562	
South Dakota	2, 122, 406	274, 808	1, 847, 598		1, 847, 598			2	3	Mar. 10	64, 024, 928	
Tennessee	3, 407, 886		3, 407, 886	22, 768	3, 385, 118			2	3	Feb. 9	122, 000, 680	
Texas	4, 641, 784		4, 641, 784		3, 481, 338		19 1, 160, 446	1	1		464, 178, 427	
Utah	1, 064, 004		1, 064, 004	3, 750	20 1, 060, 254			2½	3½	Apr. 1	32, 217, 216	
Vermont	502, 272		502, 272		8 502, 272			1	2	Feb. 26	25, 863, 167	
Virginia	3, 863, 117	161, 166	3, 701, 951	5, 604	2, 464, 231	1, 232, 116		3	21 3		123, 398, 365	
Washington	3, 205, 114	184, 302	3, 020, 812		3, 020, 812			2	2		151, 040, 586	
West Virginia	2, 222, 329	35, 590	2, 186, 739	7, 500	22 2, 179, 239			2	3½	July 1	76, 331, 660	
Wisconsin	4, 155, 469	123, 793	4, 031, 676	10, 000	4, 021, 676			0	2	Apr. 1	201, 583, 789	48, 830, 860
Wyoming	460, 972	4, 675	456, 297	228	456, 069			1	2½	do	20, 746, 056	
Total			146, 028, 940	217, 393	102, 065, 216	32, 721, 704	11, 024, 627	Av. 2.26			6, 457, 783, 284	2, 131, 056, 365

Bureau of Public Roads.

Total tax earnings on fuel for motor vehicles represent the actual taxes which are available for disposal according to the laws of the various States. The gross tax assessed and exemption refunds show the procedure for deriving the total tax, and these totals being of minor importance are not entered in this table. As some States allow no refunds for uses other than for propelling motor vehicles on highways, some of the total taxes are derived from liquid fuel, such as gasoline, etc., used for dyeing and cleaning, and for use in motor boats, farm tractors, etc., which fact should be taken into consideration. A majority of the States paid for collection costs from sources other than from this tax. The last column shows estimates based on best available data and is shown so that a fair figure for gasoline consumption may be obtainable.

1 For maintenance only.
2 In addition $438,436 collected on motor-oil tax of 10 cents per gallon.
3 Includes $873,240 payments on county road and bridge bonds.
4 Delinquent taxes uncollected not disposable in 1925.
5 To State treasury; same partly used to pay discounts on Western & Atlantic R. R. rentals.
6 Unaccounted for; probably delinquent taxes.
7 Tax increased to 5 cents, effective Feb. 21, 1926.
8 For maintenance only.
9 Includes $282,913 for maintenance.
10 For maintenance and reconstruction.
11 For maintenance of Baltimore streets.
12 Includes $3,000,000 for interest and retirement payments on State road bonds.
13 Payments to counties on State-award highways.
14 For sea wall in Harrison County.
15 For State general fund.
16 Maintenance of municipal streets.
17 Includes $70,868 paid in delinquent taxes of former years.
18 Covers part of first four months of year only, as new law excludes State general fund from share in gasoline-tax fund.
19 For free school fund.
20 Includes $460,000 payment of interest and to sinking fund on State road bonds.
21 Tax increased to 4½ cents, effective Mar. 11, 1926.
22 Includes $1,520,463 payment of interest on State road bonds.
23 For improvement and repair of Washington streets.

TABLE 563.—*Motor vehicle revenues, 1925* [1]

State [2]	Total gross receipts [3]	Registration receipts [4]: Motor cars: Total motor cars	Registration receipts: Motor cars: Passenger cars and busses	Registration receipts: Motor cars: Trucks and tractors	Registration receipts: Other vehicles: Trailers	Registration receipts: Other vehicles: Motor cycles	Miscellaneous receipts: Dealers' licenses	Miscellaneous receipts: Chauffeur and operator permits	Miscellaneous receipts: Miscellaneous	Disposition of gross receipts: Collection and administration	Disposition: For highway purposes: State highways	Disposition: For highway purposes: Local roads	Disposition: For highway purposes: State road bonds	Disposition: For other purposes
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Alabama	2,511,129	[5] 2,494,820					2,599	10,410	3,299	[6] 105,527	769,874	486,490	1,138,828	[7] 10,410
Arizona	405,592	385,032				644	3,649	1,695	14,573	18,000	[8] 387,592			
Arkansas	3,150,000	(9)								12,000	1,731,000	583,000	824,000	
California *	7,816,298	6,754,002	4,081,130	2,672,872	209,185	39,956	42,251	258,684	512,220	951,076	3,432,611	3,073,607		[10] 359,004
Colorado *	1,430,299	1,336,392	1,127,149	209,243	1,140	3,724			89,043	71,515	679,392	679,392		
Connecticut *	5,644,247	4,303,483	3,178,878	1,124,605	7,853	15,376			1,317,535		5,644,247			
Delaware *	680,700	517,004	378,265	138,739	2,269	1,485	7,990	133,720	18,232		680,700			
District of Columbia *	291,207	111,758	98,456	13,302		1,312		49,809	128,328	[11] 36,820	[12] 254,387			
Florida *	3,645,628	3,449,052	2,536,383	912,669	18,927	4,803	24,435	9,019	139,392	261,220	2,538,306	846,102		
Georgia *	3,010,415	2,952,609	2,473,485	479,124		4,081	42,700	5,594	5,431	98,297	2,912,118			
Idaho *	1,192,587	1,155,174	967,860	187,314	3,711	2,450	19,515	896	10,841	(13)	140,444	1,037,226	14,917	
Illinois *	12,969,754	12,111,679	9,259,929	2,851,750	46,004	23,963	88,050	355,519	344,539	(14)	9,982,450		2,987,304	
Indiana *	4,649,663	4,318,734	3,300,396	1,018,338	17,352	8,336	53,950	74,567	176,724	205,681	4,443,982			
Iowa	9,741,103	(9)								713,036	5,758,141		3,030,325	[15] 239,601
Kansas	4,610,090	(9)								230,505	3,284,689	1,094,896		
Kentucky *	3,780,062	3,664,979	2,864,448	800,531		5,581	31,012	16,919	61,671	132,105	3,247,733	400,224		
Louisiana	3,400,045	3,343,049				2,600		54,396		40,000	3,360,045			
Maine *	2,182,135	1,671,096	1,330,814	340,282	2,615	7,936	324,870	32,952	142,666	[16] 254,526	1,302,196		552,647	[17] 72,766
Maryland *	2,576,301	2,006,322	1,744,423	261,899	11,978	15,682		262,595	279,724	[16] 250,000	2,326,301			
Massachusetts *	9,843,901	7,346,952	5,794,224	1,552,728	14,795	47,069	59,700	1,396,756	973,629	921,514	8,922,387			
Michigan *	14,526,002	13,107,863	10,160,579	2,947,284	121,435	13,234	86,563	241,782	955,125	300,000	7,356,467	6,000,000		[19] 869,535
Minnesota *	9,744,834	9,651,795	8,654,290	997,505	6,847	11,743	34,092		40,357	(20)	6,294,834		3,450,000	
Mississippi *	1,530,000	1,529,150	1,377,000	152,150		850				45,900		1,484,100		
Missouri	7,267,098	(9)								432,023	6,835,075			
Montana *	915,253	914,878	788,125	126,753		375				32,000		883,253		
Nebraska *	3,936,458	3,791,628	3,141,477	650,151	3,456	4,902			136,472	98,411	1,151,414	2,686,633		
Nevada	209,197	208,401				600			196	10,584	114,225	3,138	81,250	
New Hampshire	1,736,094	1,383,969			(21)	9,556	28,401	229,535	84,633	114,610	1,613,804			[22] 7,680
New Jersey *	10,515,323	7,582,255	4,527,893	3,054,362	45,895	15,460	63,661	1,983,948	824,104	1,177,057	5,552,266	3,725,000		[23] 61,000
New Mexico *	457,874	447,001	403,344	43,657	570	728			9,575	31,991	283,922	141,961		

New York *	25,506,245	22,502,688	15,675,072	6,827,616	36,168	85,186	163,745		2,728,458	[24] 372,848	18,876,461	6,241,060		[23] 15,876
North Carolina	8,369,844	(9)								149,761	8,210,083		(26)	
North Dakota *	1,083,573	1,049,324	935,031	114,293		1,397			32,852	150,000	401,787	401,786	130,000	
Ohio	13,147,231	(9)								(27)	6,573,616	6,573,615		
Oklahoma	4,576,572	(9)								(18)	187,858	3,978,022		[29] 410,692
Oregon *	5,370,202	5,207,691	4,440,577	767,114	(21)	14,629	17,570	77,107	53,205	200,000		1,292,551	3,877,651	
Pennsylvania *	21,926,972	16,934,504	11,568,692	5,365,812	29,277	41,932	296,887	1,721,187	2,903,185	[30] 2,563,137	18,952,448			[31] 411,387
Rhode Island *	1,863,955	1,432,561	1,059,054	373,507	1,003	5,009	13,340	234,504	177,538	306,492	1,557,463			
South Carolina *	2,366,076	2,106,271	1,784,735	321,536	13,710	1,567	25,670	1,141	217,717	187,729	1,736,716			[32] 441,631
South Dakota *	2,445,112	2,403,501	2,143,944	259,557		1,630	23,975		16,006	21,511	1,222,556	1,201,045		
Tennessee	3,060,948	(9)								54,243	3,006,705			
Texas	13,477,931	8,976,151				11,140			1,490,640	476,146	9,368,187	3,633,598		
Utah	554,235	(9)											[33] 554,235	
Vermont *	1,497,146	1,265,611	1,145,126	120,485		5,000			226,535	82,037	1,415,109			
Virginia *	4,300,950	3,947,402	3,414,997	532,405	4,594	7,576			341,378	(34)	4,122,018			[35] 178,932
Washington *	4,980,026	4,848,572	3,774,828	1,073,744	32,715	15,414			83,325	240,059	4,665,195	74,772		
West Virginia *	3,354,247	3,022,617	2,470,524	552,093	2,577	5,902	40,910	137,620	144,621	264,386	783,573		2,000,000	[36] 306,288
Wisconsin *	7,896,210	7,659,722	6,309,848	1,349,874	(21)	21,140	86,775		128,573	380,000	5,626,210	1,875,000	(37)	[22] 15,000
Wyoming *	482,857	470,459	378,169	92,290		1,054			11,344	(14)			482,857	
Detailed total	[2] 184,412,512	161,574,729	123,289,145	38,285,584	634,076	436,482	1,537,661	6,994,219	13,235,345					
Grand total	260,619,621									11,992,747	177,706,587	48,396,471	19,124,014	3,399,802

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[1] All States report amounts of full calendar year, except North Carolina, which reports for only six months, July 1, to Dec. 13 on account of the registration year beginning on July 1 in that State.

[2] The 34 States starred show complete receipt details, which are totaled below under the nine receipt columns and subtotals called "Detailed total."

[3] Total funds received by State and county officials in connection with the operation of the motor-vehicle license laws.

[4] Receipts received for registration, nonresident registrations, duplicate tags, etc., eliminated.

[5] Includes all registered vehicles.

[6] Includes $62,370 for probate judges.

[7] Amount from licenses of taxi chauffeurs allotted to State general fund.

[8] For maintenance work.

[9] No detail given.

[10] Traffic officers' expenses, deducted from county share of net receipts.

[11] All money collected deposited in United States Treasury. This amount is the appropriation for expenses of administration.

[12] Amount to balance with gross receipts. The United States appropriations for streets is much higher.

[13] Special State appropriation through State highway fund.

[14] Special State appropriation.

[15] For State highway commission maintenance.

[16] Includes $153,531 for motor-vehicle law enforcement

[17] Expenses of State highway commission.

[18] Estimated.

[19] Expenses of motor-vehicle theft department.

[20] Estimated at $302,600 paid from State appropriation.

[21] Included under motor cars.

[22] Refunds.

[23] Toll bridge commission.

[24] Collection fees of county clerks in addition to the expenses of seven city offices, $1,857,900 taken from general State fund.

[25] For period of six months, July 1 to Dec. 31, as registration year begins July 1.

[26] Interest and sinking fund requirements included in State highway amount.

[27] Special legislative appropriation of $363,659.

[28] Expenses from State highway department fund.

[29] State general fund to July 1, 1925; not to receive any share after this rate.

[30] $1,420,048 expended for administration and balance for administration of road work by State highway department.

[31] For State highway patrol.

[32] Includes $374,140 refund by amendment to law and $67,491 to State general fund.

[33] Includes amount spent on collection and administration.

[34] State appropriation of $296,969.05.

[35] Operation of auto theft law.

[36] State road commission expenses.

[37] Bond payments included with other items.

TABLE 564.—*Lumber: Average prices, Douglas fir and southern yellow pine, f. o. b. mill, 1913–1926*

Period	Douglas fir		Southern yellow pine	
	Price per M ft.	Price index, 1913=100	Price per M ft.	Price index, 1913=100
	Dollars		*Dollars*	
1913	11.44	100.0	14.77	100.0
1914	10.58	92.5	13.68	92.6
1915	9.80	85.5	13.02	88.2
1916	11.63	101.7	16.12	109.2
1917	16.93	147.9	21.13	143.1
1918	21.21	186.3	26.45	179.1
1919	25.83	225.9	33.94	229.8
1920	36.78	323.3	44.74	302.9
1921	19.98	174.7	21.18	143.4
1922	23.90	208.9	26.44	179.0
1923	28.93	252.9	30.81	208.6
1924	23.14	202.3	28.16	190.7
1925	21.63	189.1	28.31	191.7
1920				
January	41.98	366.0	52.21	353.5
February	46.31	404.8	57.94	392.3
March	46.66	407.0	61.60	417.1
April	43.15	377.1	57.53	389.5
May	40.21	351.2	54.65	370.0
June	36.05	315.1	40.05	271.2
July	33.69	294.5	41.34	279.9
August	32.86	287.2	43.42	294.0
September	31.29	273.4	41.09	278.2
October	27.57	241.0	34.44	233.2
November	24.05	210.0	26.67	180.6
December	22.61	197.6	25.88	175.2
1921				
January	20.20	176.6	21.35	144.6
February	18.85	164.7	21.18	143.4
March	17.59	153.2	20.92	141.7
April	16.87	147.3	20.36	137.9
May	16.42	143.2	20.82	140.9
June	15.90	143.5	22.32	151.1
July	15.28	133.4	20.75	140.5
August	14.98	130.8	20.40	138.1
September	14.86	129.8	20.61	139.5
October	15.97	139.6	21.59	146.2
November	17.07	149.2	23.14	156.7
December	17.75	155.1	21.77	147.4
1922				
January	18.73	163.7	22.68	153.6
February	22.75	198.9	22.61	153.1
March	22.40	195.8	22.27	151.5
April	20.44	178.7	22.78	154.2
May	21.10	184.4	24.85	168.2
June	23.24	203.1	29.07	196.8
July	24.18	211.3	27.19	184.9
August	24.83	217.0	28.47	192.8
September	27.13	237.2	31.24	211.5
October	27.97	244.5	31.71	214.7
November	25.82	225.7	30.61	207.2
December	26.49	231.6	30.61	207.2
1923				
January	28.54	249.5	30.42	205.9
February	29.42	257.2	32.81	222.1
March	30.22	264.2	33.71	228.2
April	31.46	275.0	33.38	226.0
May	31.02	271.2	33.85	229.2
June	30.36	265.4	32.40	219.4
July	27.68	241.9	31.24	210.8
August	26.97	235.7	30.82	208.6
September	27.18	237.5	27.53	186.4
October	27.24	238.1	28.77	194.7
November	28.97	253.2	27.83	188.4
December	26.94	235.5	26.56	179.8
1924				
January	28.30	247.4	29.40	199.1
February	26.33	230.2	30.16	204.1
March	24.69	215.8	29.83	202.0
April	24.39	213.2	29.14	197.3
May	22.40	195.8	27.55	186.5
June	22.99	201.0	27.36	185.2
July	21.93	191.7	25.91	175.4
August	22.42	196.0	27.77	188.0
September	21.59	188.6	29.46	199.5
October	21.10	184.5	26.71	180.8
November	21.48	187.7	25.81	174.7
December	21.82	190.7	30.13	204.0
1925				
January	22.52	196.9	29.43	199.3
February	22.19	194.0	29.66	200.8
March	21.99	192.2	29.02	196.5
April	21.60	188.8	28.29	191.5
May	21.70	189.7	27.07	183.3
June	21.24	185.7	26.58	180.0
July	21.18	185.1	27.55	186.5
August	22.25	194.5	28.56	193.4
September	21.39	187.0	30.50	206.5
October	21.28	186.0	28.17	190.7
November	21.33	186.5	27.14	183.8
December	21.05	184.0	29.01	196.4
1926				
January	22.29	194.8	27.66	187.3
February	21.41	187.2	28.29	191.5
March	21.70	189.7	27.14	183.8
April	21.62	189.0	26.33	178.3
May	21.19	185.2	26.04	176.3
June	21.34	186.5	26.93	182.3
July	21.25	185.8	26.80	181.4
August	21.04	183.9	26.58	180.0
September	20.73	181.2	25.78	174.5
October	20.68	180.8	--------	--------
November	20.44	178.7	24.88	168.4
December	19.93	174.2	27.15	183.8

TABLE 565.—*Rubber: International trade, average 1909–1913, annual 1923–1925*

[Thousand pounds—i. e., 000 omitted]

Country	Year ended Dec. 31							
	Average 1909–1913		1923		1924		1925, preliminary	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
PRINCIPAL EXPORTING COUNTRIES								
Angola	--------	5, 620	--------	198	--------	--------	--------	--------
Belgian Congo	--------	7, 755	--------	981	--------	1, 252	--------	[1] 1, 550
Bolivia	--------	8, 395	--------	6, 568	--------	6, 737	--------	7, 480
Brazil	--------	84, 938	[1] 45	39, 666	[1] 48	47, 545	[1][2] 49	51, 890
British India	--------	[3] 1, 504	13	14, 371	129	17, 241	--------	22, 583
British Malaya	[1] 53, 472	[1] 85, 435	157, 481	564, 765	241, 928	584, 123	357, 171	710, 025
British North Borneo [1]	--------	331	--------	9, 495	--------	10, 350	--------	12, 152
Ceylon	[3] 1, 299	10, 953	5, 644	83, 851	6, 863	83, 040	8, 809	102, 206
Dutch East Indies	[4] 1	7, 679	--------	316, 084	--------	400, 983	--------	[5] 104, 735
Ecuador	--------	1, 040	--------	1, 297	--------	72	--------	--------
French Congo	([6])	3, 797	--------	[1] 2, 150	--------	[1] 2, 950	[1] 146	[1] 2, 434
French Guinea	[1] 241	3, 937	[1] 31	2, 631	[1] 29	[1] 2, 289	[1] 49	[1] 2, 762
French Indo-China	1	398	[1] 4	[1] 12, 558	[1] 7	[1] 14, 982	[1] 13	[1] 12, 558
Gold Coast	--------	2, 893	--------	[1] 313	--------	[1] 272	--------	[1] 1, 098
Kamerun	--------	6, 409	--------	[1] 1, 677	--------	[1] 2, 134	--------	[1] 1, 662
Mexico	--------	[1] 13, 462	--------	[1] 3, 100	--------	[1] 3, 502	[7] 128	[1] 9, 971
Nigeria	--------	3, 054	--------	478	--------	1, 170	--------	2, 128
Peru	--------	5, 030	--------	4	--------	198	--------	16
Switzerland	391	725	552	260	646	359	1, 036	1, 347
PRINCIPAL IMPORTING COUNTRIES								
Austria	--------	--------	5, 396	969	5, 410	646	5, 401	913
Austria-Hungary	6, 696	1, 619	--------	--------	--------	--------	--------	--------
Belgium	25, 891	20, 749	7, 411	2, 518	7, 981	1, 946	8, 464	1, 950
Canada	3, 945	--------	29, 696	([6])	32, 300	--------	44, 407	--------
Czechoslovakia	--------	--------	[1] 603	[1] 27	4, 075	[1] 13	4, 625	[1] 21
Denmark	250	--------	794	[1] 10	1, 062	[1] 3	986	[1] 1
France	32, 704	21, 615	71, 840	10, 482	79, 858	11, 659	100, 813	16, 928
Germany	42, 004	9, 844	43, 538	2, 056	52, 592	1, 684	79, 579	3, 571
Hungary	--------	--------	985	3	[1] 1, 624	[1] 35	997	134
Italy	5, 381	225	19, 244	226	19, 878	248	26, 381	817
Japan	1, 917	--------	38, 793	--------	44, 281	--------	28, 793	--------
Netherlands	10, 822	7, 172	17, 791	16, 016	12, 864	14, 672	6, 909	4, 949
Russia	19, 131	--------	[1] 5, 381	--------	[1] 4, 548	--------	[1] 14, 192	--------
Spain	1, 067	--------	4, 870	--------	8, 137	--------	7, 487	--------
Sweden	1, 695	1	3, 076	141	3, 917	123	3, 786	109
United Kingdom	43, 141	--------	28, 449	--------	[8] −25, 872	--------	11, 043	--------
United States	100, 180	--------	692, 483	--------	734, 845	--------	888, 478	--------
Other countries	5, 838	61, 204	4, 645	6, 409	6, 891	5, 437	6, 797	6, 182
Total	356, 067	375, 284	1, 138, 765	1, 099, 304	1, 244, 041	1, 215, 665	1, 606, 539	1, 082, 172

Division of Statistical and Historical Research. Official sources except where otherwise noted.

Figures for rubber include "india rubber," so called, caoutchouc, caucho, jebe (Peru), hule (Mexico), borracha, massaranduba, mangabeira, manicoba, sorva, and seringa (Brazil), gomelastiek (Dutch East Indies), caura, ser nambi (Venezuela).

[1] International Yearbook of Agricultural Statistics.
[2] Seven months.
[3] Three-year average.
[4] One year only.
[5] Java and Madura only.
[6] Less than 500 pounds.
[7] Six months.
[8] Reexports in excess of imports.

TABLE 566.—*National forests: Net areas of forests, by States, June 30, 1926*

State and forest	Net area
	Acres
Alabama	120, 884
Alabama	[1] 105, 534
McClellan	15, 350
Alaska	21, 343, 172
Chugach	4, 794, 079
Tongass	16, 549, 093
Arizona	11, 316, 232
Apache [2]	677, 272
Coconino	1, 716, 806
Coronado [2]	1, 355, 326
Crook	1, 428, 345
Kaibab	769, 894
Prescott	1, 164, 829
Sitgreaves	671, 984
Tonto	2, 260, 709
Tusayan	1, 271, 067
Arkansas	968, 842
Ouachita	[1] 663, 987
Ozark	[1] 304, 855
California	19, 164, 573
Angeles	646, 192
California	822, 735
Cleveland	380, 109
Crater [2]	48, 218
Eldorado [2]	551, 478
Inyo [2]	1, 638, 248
Klamath [2]	1, 525, 257
Lassen	944, 292
Modoc	1, 470, 005
Mono [2]	796, 034
Plumas	1, 107, 947
San Bernardino	597, 301
Santa Barbara	1, 772, 555
Sequoia	1, 450, 133
Shasta	868, 373
Sierra	1, 492, 617
Siskiyou [2]	329, 384
Stanislaus	810, 632
Tahoe [2]	502, 861
Trinity	1, 410, 202
Colorado	13, 253, 779
Arapaho	636, 446
Cochetopa	908, 787
Colorado	829, 414
Grand Mesa	659, 264
Gunnison	905, 256
Hayden [2]	65, 769
Holy Cross	1, 124, 534
La Sal [2]	26, 631
Leadville	927, 487
Montezuma	697, 333
Pike	1, 086, 990
Rio Grande	1, 135, 898
Routt	748, 838
San Isabel	598, 936
San Juan	1, 239, 361
Uncompahgre	777, 701
White River	885, 134
Florida: Florida	342, 771
Georgia	238, 538
Benning	78, 560
Cherokee [2]	70, 196
Nantahala [2]	89, 782

State and forest	Net area
	Acres
Idaho	19, 086, 486
Boise	1, 062, 768
Cache [2]	494, 449
Caribou [2]	704, 054
Challis	1, 272, 050
Clearwater	787, 985
Coeur d'Alene	662, 982
Idaho	1, 687, 915
Kaniksu [2]	186, 984
Lemhi	1, 357, 705
Minidoka [2]	520, 589
Nezperce	1, 661, 166
Payette	1, 307, 235
Pend Oreille	673, 940
St. Joe	555, 618
Salmon	1, 708, 478
Sawtooth	1, 158, 259
Selway	1, 689, 157
Targhee [2]	1, 029, 527
Weiser	565, 625
Illinois: Bellevue-Savanna	10, 710
Kentucky: Knox	22, 660
Maine: White Mountain [2]	32, 256
Maryland: Meade	4, 725
Michigan: Michigan	126, 762
Minnesota	991, 106
Minnesota	190, 945
Superior	800, 161
Montana	15, 908, 330
Absaroka	851, 046
Beartooth	660, 127
Beaverhead	1, 339, 224
Bitterroot	1, 047, 071
Blackfeet	836, 967
Cabinet	829, 311
Custer [2]	517, 158
Deerlodge	828, 980
Flathead	1, 721, 478
Gallatin	581, 002
Helena	682, 322
Jefferson	1, 040, 395
Kootenai	1, 334, 978
Lewis and Clark	810, 731
Lolo	851, 249
Madison	953, 456
Missoula	1, 022, 835
Nebraska: Nebraska	205, 946
Nevada	4, 976, 558
Dixie [2]	56, 324
Eldorado [2]	400
Humboldt	1, 322, 352
Inyo [2]	60, 416
Mono [2]	464, 502
Nevada	1, 175, 128
Tahoe [2]	13, 853
Toiyabe	1, 883, 583
New Hampshire: White Mountain [2]	408, 949
New Jersey: Dix	6, 785

State and forest	Net area
	Acres
New Mexico	8, 481, 455
Apache [2]	886, 774
Carson	1, 067, 082
Coronado [2]	124, 758
Datil	1, 753, 051
Gila	1, 596, 201
Lincoln	1, 114, 207
Manzano	669, 010
Santa Fe	1, 270, 372
New York	15, 954
Pine Plains	9, 800
Upton	6, 154
North Carolina	376, 032
Cherokee [2]	----------
Nantahala [2]	[3] 117, 022
Pisgah [3]	[3] 259, 010
Unaka [2]	----------
Oklahoma: Wichita	61, 480
Oregon	13, 216, 240
Cascade	1, 023, 510
Crater [2]	805, 088
Deschutes	1, 294, 743
Fremont	849, 286
Klamath [2]	8, 723
Malheur	1, 048, 506
Mount Hood	1, 059, 292
Ochoco	718, 151
Santiam	610, 918
Siskiyou [2]	1, 032, 750
Siuslaw	549, 850
Umatilla [2]	919, 871
Umpqua	1, 014, 029
Wallowa	962, 014
Whitman	1, 319, 506
Pennsylvania	170, 102
Allegheny	149, 232
Tobyhanna	20, 870
Porto Rico: Luquillo	12, 443
South Carolina	58, 101
Jackson	20, 225
Nantahala [2]	37, 876
South Dakota	1, 064, 357
Black Hills [2]	481, 996
Custer [2]	73, 606
Harney	508, 755
Tennessee	296, 079
Cherokee [2]	165, 887
Pisgah [2]	19, 247
Unaka [2]	110, 945
Utah	7, 481, 573
Ashley [2]	981, 980
Cache [2]	283, 442
Dixie [2]	795, 530
Fishlake	1, 384, 742

[1] Figures include acreage actually acquired under the Weeks law.
[2] Forest lies in more than 1 State.
[3] Nantahala includes 3,302 acres and Pisgah 8,067 acres transferred from the Treasury Department.

TABLE 566.—*National forests: Net areas of forests, by States, June 30, 1926*—Continued

State and forest	Net area	State and forest	Net area	State and forest	Net area
	Acres		*Acres*		*Acres*
Utah—Continued.		Washington	9,688,350	Wyoming	8,505,740
La Sal [2]	504,291				
Manti	724,432	Chelan	1,807,811	Ashley [2]	6,460
Minidoka [2]	70,155	Columbia	763,179	Bighorn	1,125,632
Powell	1,050,462	Colville	745,781	Black Hills [2]	144,416
Uinta	1,077,292	Kaniksu [2]	257,702	Caribou [2]	6,315
Wasatch	609,247	Mount Baker	1,460,665	Hayden [2]	328,124
		Olympic	1,530,867	Medicine Bow	552,174
Virginia	578,509	Rainier	1,276,532	Shoshone	1,584,027
		Snoqualmie	689,574	Targhee [2]	345,570
Eustis	4,220	Umatilla [2]	313,439	Teton	1,881,052
Humphreys	3,184	Wenatchee	842,800	Washakie	865,282
Lee	7,177			Wyoming	1,666,688
Monongahela [2]	10,414	West Virginia	222,731		
Natural Bridge	152,831			Total (160 national forests)	158,759,210
Shenandoah [2]	355,474	Monongahela [2]	163,911		
Unaka [2]	45,209	Shenandoah [2]	58,820		

Forest Service in cooperation with the General Land Office.

[2] Forest lies in more than 1 State.

METEOROLOGICAL STATISTICS

Table 567.—*Temperature: Normal[1] and 1926, by months, at selected points in the United States*

Station	January		February		March		April		May		June	
	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926
	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.
Greenville, Me	12.8	13.4	12.4	14.0	23.5	19.3	36.4	31.6	49.5	47.0	58.9	56.6
Boston, Mass	27.9	31.0	28.8	27.8	35.6	34.2	46.4	44.8	57.1	56.0	66.5	64.3
Buffalo, N. Y	24.6	25.2	24.3	21.9	31.1	26.8	42.8	35.0	54.6	50.0	64.4	59.0
Canton, N. Y	16.3	18.8	18.0	11.8	27.7	20.2	42.5	34.5	56.2	51.2	65.8	59.8
Trenton, N. J	30.5	32.2	30.7	30.1	39.1	36.0	49.8	47.2	61.1	60.6	69.5	65.6
Pittsburgh, Pa	30.7	30.4	32.3	31.8	39.6	33.8	51.2	44.9	62.4	60.9	70.7	66.4
Scranton, Pa	26.6	27.2	27.3	25.4	35.7	31.4	48.1	43.3	59.4	57.9	67.8	62.5
Cincinnati, Ohio	30.3	30.2	32.8	35.5	40.9	35.4	52.4	46.8	63.1	64.0	71.2	68.8
Cleveland, Ohio	26.5	27.2	27.4	28.1	34.6	30.8	46.2	41.5	57.9	56.9	67.1	64.3
Evansville, Ind	33.5	34.3	36.3	40.4	45.9	40.3	56.7	51.1	66.7	68.5	75.1	73.2
Indianapolis, Ind	28.4	28.6	31.1	34.6	40.0	34.4	52.1	45.6	62.9	64.3	71.6	68.2
Chicago, Ill	23.7	26.4	26.3	30.9	35.3	30.2	46.9	42.0	57.5	58.4	67.3	63.4
Peoria, Ill	23.1	26.9	25.9	33.4	37.0	32.0	50.9	44.0	61.7	64.0	70.9	67.2
Grand Rapids, Mich	24.5	25.6	23.7	26.1	33.4	27.7	47.0	40.4	58.0	58.0	67.8	62.2
Marquette, Mich	16.3	18.6	16.3	18.9	24.8	20.7	37.8	34.6	49.0	49.3	58.9	55.7
Madison, Wis	16.7	19.6	19.1	25.6	30.6	25.8	45.4	41.6	57.6	58.2	67.2	63.0
Duluth, Minn	7.9	11.4	11.4	16.2	23.7	19.4	37.0	37.0	47.3	48.8	57.2	56.7
St. Paul, Minn	12.6	16.2	15.8	23.3	29.1	26.2	45.6	43.7	57.9	61.8	67.1	63.7
Des Moines, Iowa	20.1	25.4	23.7	33.6	35.9	33.3	50.1	47.8	61.3	65.4	70.6	67.9
Dubuque, Iowa	19.1	22.2	22.2	29.3	34.0	29.2	48.6	44.4	60.3	62.5	69.4	64.4
St. Louis, Mo	31.1	34.6	34.8	40.2	44.1	39.6	56.1	50.3	67.0	68.4	75.0	72.6
Springfield, Mo	33.5	34.0	35.2	41.2	45.2	39.9	56.0	51.3	64.5	66.2	72.5	69.8
Bismarck, N. Dak	7.8	18.6	10.3	24.6	24.2	28.4	42.1	44.6	54.5	59.8	63.7	63.2
Devils Lake, N. Dak	0.3	14.2	4.5	19.2	18.5	21.7	38.2	40.4	52.7	57.2	62.6	58.6
Pierre, S. Dak	16.0	20.0	18.6	31.8	31.5	34.5	46.8	49.1	58.0	64.0	68.5	67.7
North Platte, Nebr	22.9	30.8	26.6	37.6	36.6	37.0	48.6	48.2	58.7	64.6	67.5	68.0
Omaha, Nebr	21.9	26.6	25.5	35.5	37.0	36.3	51.2	50.0	62.4	67.0	71.6	70.6
Concordia, Kans	26.4	31.0	29.8	39.5	41.0	39.5	53.5	49.6	63.2	67.2	73.0	72.6
Dodge City, Kans	29.0	33.1	33.2	41.6	42.8	40.6	53.6	48.2	63.5	64.3	72.5	72.8
Iola, Kans	29.8	33.6	33.2	41.8	44.5	41.4	56.2	50.3	65.2	68.2	74.1	72.1
Washington, D. C	33.4	33.8	35.3	36.5	42.6	40.1	53.3	51.9	63.7	64.3	72.2	69.1
Lynchburg, Va	37.5	38.0	40.3	42.8	47.3	42.5	57.3	54.4	67.3	66.4	74.6	71.1
Norfolk, Va	40.6	41.6	42.7	44.2	48.2	44.2	56.8	55.3	66.2	65.6	74.4	72.6
Parkersburg, W. Va	32.5	31.1	34.2	35.6	42.8	37.4	53.4	48.2	63.8	63.8	71.4	68.5
Charlotte, N. C	41.2	41.0	43.9	46.2	50.4	45.0	59.8	58.6	68.9	69.9	75.5	75.4
Charleston, S. C	49.9	48.6	52.4	53.0	57.4	52.4	64.5	62.8	72.7	72.6	78.9	78.6
Atlanta, Ga	42.6	42.6	45.3	47.2	52.0	45.5	61.0	59.0	69.9	70.0	76.0	75.3
Thomasville, Ga	51.0	50.8	55.0	56.1	60.2	55.0	66.7	65.8	74.0	72.9	79.5	78.7
Jacksonville, Fla	55.4	54.2	58.0	58.0	62.6	58.0	68.7	66.6	75.0	73.8	79.9	79.0
Miami, Fla	66.5	67.6	67.1	66.9	70.2	68.4	72.8	74.8	76.4	76.8	80.0	81.0
Memphis, Tenn	40.9	41.4	44.3	48.4	52.3	47.4	61.8	58.3	70.6	71.4	77.6	77.2
Nashville, Tenn	38.6	39.6	41.6	44.4	49.2	43.2	59.0	55.8	68.2	68.1	75.6	73.6
Birmingham, Ala	45.1	43.9	48.0	49.8	55.4	48.2	63.3	59.9	71.1	69.6	77.9	77.0
Mobile, Ala	51.5	50.4	54.7	55.8	59.7	55.2	66.3	64.5	74.4	72.8	80.3	79.8
New Orleans, La	54.2	52.0	57.3	58.8	62.8	57.6	68.8	67.0	75.4	74.8	80.6	81.8
Shreveport, La	47.0	46.5	50.9	55.4	58.3	54.0	65.8	62.4	73.6	72.8	80.7	80.1
Amarillo, Tex	35.3	36.0	38.1	46.4	46.9	43.6	55.8	51.0	64.1	64.4	72.8	73.1
Brownsville, Tex	59.8	55.0	62.6	65.9	68.2	67.0	73.7	71.9	78.6	77.4	82.4	81.7
El Paso, Tex	45.0	40.6	49.0	51.5	55.8	53.6	63.4	60.7	71.5	70.3	79.6	82.0
Fort Worth, Tex	45.4	44.8	48.3	54.8	57.7	52.9	65.0	60.6	72.3	71.7	79.9	79.7
Galveston, Tex	53.8	50.0	56.3	58.8	62.4	58.9	68.7	66.6	74.8	73.8	80.7	80.8
San Antonio, Tex	52.3	50.2	55.4	61.2	62.8	58.6	69.1	65.7	75.1	74.6	81.0	81.6
Oklahoma City, Okla	36.4	37.2	39.6	47.8	50.0	46.5	50.8	54.9	67.7	70.2	76.0	76.2
Little Rock, Ark	41.4	41.5	44.9	49.2	53.0	48.7	62.1	59.2	70.3	70.6	77.4	77.9
Havre, Mont	12.9	26.6	13.6	32.9	27.1	34.8	43.7	45.8	53.4	58.0	62.0	63.4
Kalispell, Mont	20.4	24.6	23.3	34.0	32.9	38.6	43.6	47.2	51.4	51.9	57.7	60.6
Cheyenne, Wyo	25.5	25.9	27.3	33.2	33.1	31.8	40.9	42.1	50.3	53.0	60.4	60.4
Sheridan, Wyo	18.9	25.7	22.4	33.4	32.7	34.9	43.4	45.8	50.7	55.6	61.1	62.0
Pueblo, Colo	29.9	30.0	32.9	41.6	41.6	39.2	50.1	48.8	59.2	60.4	69.0	70.2
Santa Fe, N. Mex	28.8	25.3	33.1	36.8	39.7	38.4	46.7	46.6	55.7	54.0	64.8	66.0
Phoenix, Ariz	51.2	49.4	55.1	58.1	60.7	63.9	67.0	68.6	75.0	75.8	84.5	87.0
Modena, Utah	26.7	27.4	31.0	36.0	38.2	40.7	46.0	49.4	53.5	56.2	63.3	67.8
Salt Lake City, Utah	29.2	28.8	33.8	39.0	41.7	44.1	49.6	55.3	57.4	60.7	67.4	72.0
Winnemucca, Nev	28.6	29.0	33.5	38.4	40.0	43.4	46.7	52.6	53.9	56.8	62.8	68.7
Boise, Idaho	29.8	30.4	34.8	41.8	42.7	45.6	50.4	56.6	57.1	58.7	65.3	70.2
Seattle, Wash	39.5	42.0	41.1	46.8	44.9	50.4	49.4	55.8	54.5	56.4	59.0	62.8
Walla Walla, Wash	32.7	35.6	37.1	46.3	46.1	50.6	53.1	59.3	59.6	60.7	66.5	71.5
Portland, Oreg	39.4	42.8	42.1	48.7	46.9	53.5	51.8	60.2	56.9	59.2	62.4	67.0
Roseburg, Oreg	41.2	43.2	43.4	49.1	47.1	52.0	51.0	59.4	56.0	59.7	62.5	68.2
Eureka, Calif	46.9	49.4	47.2	51.8	48.3	51.5	49.9	54.8	52.0	55.4	54.3	55.5
Fresno, Calif	46.2	43.2	51.1	54.2	55.0	60.9	60.2	66.0	67.1	70.5	75.8	80.4
Los Angeles, Calif	54.6	59.4	55.5	61.2	57.5	63.0	59.4	63.4	62.2	65.4	66.4	67.2
Sacramento, Calif	45.8	42.0	50.1	53.0	54.3	60.2	58.1	63.0	63.3	66.4	69.4	73.4
San Diego, Calif	54.3	56.7	55.1	59.7	56.7	62.4	58.5	63.4	60.8	63.8	63.9	66.2
San Francisco, Calif	49.9	48.0	52.2	56.0	54.2	60.6	55.0	61.6	56.8	61.0	58.5	59.2

[1] Normals are based on records of 30 or more years of observation.

Table 567.—*Temperature: Normal*[1] *and 1926, by months, at selected points in the United States*—Continued

Station	July		August		September		October		November		December		Annual	
	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926
	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.
Greenville, Me	65.4	64.1	62.5	62.6	55.0	53.2	45.6	43.2	30.7	30.8	[illegible]	15.3	39.2	37.6
Boston, Mass	71.7	70.5	69.9	70.4	63.2	62.4	53.6	53.4	42.0	44.2	[illegible]	28.6	49.6	49.0
Buffalo, N. Y	69.8	67.7	68.6	68.6	62.4	61.2	51.9	49.3	39.4	39.7	29.8	25.2	47.0	44.1
Canton, N. Y	70.5	66.4	67.8	66.2	59.3	57.3	47.2	45.4	33.9	35.3	22.7	15.9	44.0	40.2
Trenton, N. J	74.5	74.0	73.0	73.5	66.9	65.1	55.6	54.3	44.4	43.7	34.4	28.8	52.5	50.9
Pittsburgh, Pa	74.6	73.5	72.9	73.8	66.4	67.2	55.7	53.5	43.2	41.4	34.2	31.6	52.8	50.8
Scranton, Pa	71.7	71.4	69.8	70.6	62.9	62.0	51.9	49.6	40.5	40.7	30.7	25.0	49.4	47.2
Cincinnati, Ohio	75.1	75.2	73.6	75.6	67.1	69.0	55.7	55.7	42.5	41.0	33.4	32.0	53.2	52.4
Cleveland, Ohio	71.4	71.6	70.0	72.2	63.9	65.1	53.6	52.2	40.9	40.0	31.2	28.0	49.2	48.2
Evansville, Ind	78.9	80.6	77.4	78.2	70.7	73.7	59.4	59.7	46.6	41.8	37.1	35.2	57.0	56.4
Indianapolis, Ind	75.7	76.2	73.7	75.8	66.9	67.8	55.7	55.2	42.3	39.2	32.2	29.6	52.7	51.6
Chicago, Ill	72.5	71.1	71.6	72.0	65.2	64.4	54.0	52.4	40.1	37.0	28.8	26.6	49.1	47.9
Peoria, Ill	75.4	75.8	72.5	74.4	64.3	65.6	52.0	52.5	37.5	36.2	28.1	26.8	49.9	49.9
Grand Rapids, Mich	72.3	72.3	69.7	71.2	62.7	61.2	51.2	49.4	38.4	37.4	28.5	25.0	48.1	46.4
Marquette, Mich	64.9	63.7	63.8	62.7	57.5	52.8	46.7	42.9	33.3	28.8	22.6	19.1	41.0	39.0
Madison, Wis	72.1	71.0	69.8	70.6	62.4	60.5	50.3	48.2	35.2	31.8	22.8	19.1	45.8	44.6
Duluth, Minn	63.9	63.6	62.6	63.4	55.1	50.7	44.1	40.7	30.0	22.6	15.9	10.2	38.0	36.7
St. Paul, Minn	72.1	71.8	69.4	69.6	61.3	57.0	48.6	46.8	32.5	27.2	19.0	13.8	44.2	43.4
Des Moines, Iowa	75.4	76.2	73.1	75.8	65.6	64.1	53.4	53.0	38.4	35.2	26.0	24.4	49.5	50.2
Dubuque, Iowa	74.1	73.2	71.7	72.8	64.0	62.8	51.9	49.9	37.0	32.9	24.7	22.0	48.1	47.1
St. Louis, Mo	78.8	81.0	77.5	79.4	70.5	70.9	58.8	58.4	45.4	40.5	34.9	33.4	56.1	55.8
Springfield, Mo	76.8	77.4	75.7	76.8	68.9	70.0	58.2	58.2	45.7	40.5	36.2	35.4	55.7	55.1
Bismarck, N. Dak	69.8	72.2	67.3	66.8	58.1	53.7	44.9	45.0	28.5	24.7	14.7	11.4	40.5	42.8
Devils Lake, N. Dak	68.1	68.0	65.1	64.0	55.6	50.5	40.5	40.4	22.6	18.8	8.0	6.8	36.4	38.3
Pierre, S. Dak	75.3	75.1	72.8	73.9	63.8	59.6	49.8	51.4	33.6	29.8	21.8	22.4	46.4	48.3
North Platte, Nebr	72.9	75.8	70.8	75.6	62.1	61.4	49.7	54.7	36.6	34.2	26.7	26.8	48.3	51.2
Omaha, Nebr	76.7	78.2	74.4	76.7	66.8	64.0	54.3	55.1	38.5	34.3	26.4	25.1	50.6	51.6
Concordia, Kans	78.0	79.5	76.5	80.2	68.3	67.0	55.9	57.8	41.4	38.6	30.7	30.0	53.1	54.4
Dodge City, Kans	78.4	77.8	77.7	78.2	69.4	68.4	56.1	59.4	42.6	40.4	32.6	31.4	54.3	54.7
Iola, Kans	78.2	78.0	77.1	78.8	69.8	69.4	57.8	58.4	44.1	41.1	33.9	33.2	55.3	55.5
Washington, D. C	76.8	76.7	75.0	76.4	68.1	69.0	57.4	57.2	45.2	45.1	36.6	33.8	55.0	54.5
Lynchburg, Va	77.5	77.8	75.6	77.8	69.0	71.8	58.5	59.2	47.2	44.0	39.5	37.9	57.6	57.0
Norfolk, Va	78.7	78.9	77.4	79.6	71.6	73.2	62.5	63.0	51.4	51.4	43.1	41.4	59.5	59.2
Parkersburg, W. Va	75.4	74.9	73.9	76.2	67.3	70.2	56.1	56.0	43.8	42.4	35.2	34.9	54.2	53.3
Charlotte, N. C	78.4	80.1	77.1	80.7	71.5	76.3	61.7	63.6	50.6	47.8	43.0	44.4	60.2	60.8
Charleston, S. C	81.4	81.2	81.0	83.3	76.6	79.4	67.8	70.0	58.1	55.8	51.7	54.4	66.0	66.0
Atlanta, Ga	78.1	78.5	77.0	79.0	72.4	77.4	63.0	64.5	52.1	47.2	44.7	46.3	61.2	61.0
Thomasville, Ga	81.8	79.7	81.0	81.4	76.8	79.6	[illegible]	69.6	58.5	56.0	52.5	57.8	67.1	67.0
Jacksonville, Fla	82.1	80.2	81.7	82.2	78.3	79.2	71.1	72.0	62.2	60.0	56.3	60.9	69.3	68.7
Miami, Fla	81.0	81.6	81.4	82.4	80.1	82.8	77.0	79.4	71.8	72.2	68.0	72.2	74.4	75.5
Memphis, Tenn	80.7	80.8	79.4	80.6	73.6	77.8	63.3	65.3	51.7	47.2	43.6	43.1	61.6	61.6
Nashville, Tenn	79.1	79.8	77.8	78.4	71.8	76.9	61.0	62.4	49.0	44.2	41.0	40.9	59.3	58.9
Birmingham, Ala	80.2	79.2	79.2	80.3	74.8	79.4	64.8	65.9	53.9	49.2	46.4	49.4	63.3	62.6
Mobile, Ala	81.4	81.9	81.0	82.0	78.1	80.8	69.3	71.2	58.6	55.4	52.2	57.7	67.3	67.3
New Orleans, La	82.4	83.1	82.2	83.6	79.2	82.6	71.0	74.0	61.6	57.8	55.6	61.0	69.3	69.5
Shreveport, La	83.2	81.3	82.0	83.5	76.9	80.7	66.6	71.0	56.0	53.6	49.1	51.2	65.8	67.3
Amarillo, Tex	76.8	75.2	75.7	77.1	69.3	69.4	57.7	61.5	45.5	47.0	37.0	37.0	56.3	56.8
Brownsville, Tex	83.6	82.0	83.9	84.5	80.6	83.0	74.9	79.6	67.2	65.8	61.2	62.0	73.1	73.0
El Paso, Tex	81.1	81.5	79.2	81.0	73.9	77.4	63.5	66.2	52.7	53.8	44.9	45.2	63.3	63.8
Fort Worth, Tex	83.6	81.4	83.0	83.1	76.9	80.0	66.7	71.2	55.5	55.4	47.5	47.8	65.2	65.3
Galveston, Tex	83.4	82.4	83.0	83.7	80.1	83.2	72.7	76.7	63.3	60.9	56.4	58.1	69.6	69.5
San Antonio, Tex	83.8	82.2	83.5	84.4	79.0	82.4	70.5	75.2	60.3	59.6	53.7	54.4	68.9	69.2
Oklahoma City, Okla	80.6	79.1	79.7	80.9	72.8	72.9	61.5	64.0	48.8	46.8	39.3	39.2	59.4	59.6
Little Rock, Ark	80.9	81.2	79.8	81.2	74.1	77.4	63.6	65.8	52.1	47.8	44.2	43.6	62.0	62.0
Havre, Mont	68.3	73.0	65.4	65.9	56.4	47.4	44.5	48.1	31.2	25.9	20.4	16.2	41.6	44.8
Kalispell, Mont	64.1	68.6	62.8	62.4	53.5	46.3	43.5	46.2	32.4	34.9	24.9	23.4	42.5	44.9
Cheyenne, Wyo	66.7	65.2	65.6	67.0	57.0	51.2	44.8	47.0	34.8	37.9	28.5	26.6	44.6	45.4
Sheridan, Wyo	67.3	69.8	65.4	67.0	56.3	50.4	43.7	47.5	32.8	33.8	22.1	21.0	43.1	45.6
Pueblo, Colo	74.2	73.8	72.7	74.2	64.6	65.2	52.0	54.4	39.4	43.0	31.5	29.8	51.4	52.6
Santa Fe, N. Mex	69.0	67.2	67.4	68.9	60.9	63.2	50.4	52.8	38.9	40.0	30.7	29.2	48.8	40.0
Phoenix, Ariz	89.8	89.6	88.5	88.9	82.7	83.4	70.6	73.5	59.7	61.6	52.0	51.2	69.7	70.9
Modena, Utah	70.6	70.6	69.2	69.6	60.0	59.4	48.0	51.6	36.4	41.0	28.1	26.5	47.6	49.7
Salt Lake City, Utah	75.7	76.6	74.5	75.0	64.4	62.1	52.5	54.8	41.1	46.6	31.9	30.6	51.6	53.8
Winnemucca, Nev	70.6	73.0	69.3	70.0	59.2	55.5	48.3	49.6	38.4	43.8	30.0	27.2	48.4	50.7
Boise, Idaho	72.9	76.8	71.8	73.0	61.9	57.1	51.1	54.6	41.0	45.8	32.1	30.2	50.9	53.4
Seattle, Wash	63.1	66.0	63.1	64.1	58.1	58.0	51.4	55.0	45.6	49.4	41.7	41.6	51.0	54.0
Walla Walla, Wash	74.0	78.4	72.7	73.6	63.8	59.2	53.5	55.8	42.8	45.1	35.5	35.4	53.1	56.0
Portland, Oreg	66.7	70.5	66.7	69.2	61.7	61.6	54.2	57.8	46.8	50.6	41.2	41.0	53.1	56.8
Roseburg, Oreg	67.4	70.4	68.0	68.6	62.9	59.4	53.9	57.1	45.9	52.6	41.8	42.6	53.4	56.9
Eureka, Calif	55.5	56.9	56.0	57.6	55.9	55.4	53.6	57.0	51.1	55.9	48.2	47.6	51.6	54.1
Fresno, Calif	82.1	83.6	80.7	80.4	73.4	71.6	64.0	66.8	54.2	60.9	46.2	46.6	63.0	65.4
Los Angeles, Calif	70.2	69.8	71.1	72.6	69.0	68.0	65.3	67.6	60.9	67.0	56.6	56.1	62.4	65.1
Sacramento, Calif	73.2	77.0	72.9	73.0	69.3	67.5	62.9	64.6	53.6	58.6	46.2	46.4	59.9	62.1
San Diego, Calif	67.2	67.6	68.7	69.3	67.1	66.0	63.7	64.0	59.7	63.8	56.0	55.2	61.0	63.2
San Francisco, Calif	58.5	61.1	59.1	60.8	60.9	61.2	60.5	63.4	56.3	60.9	51.3	51.5	56.1	58.8

Weather Bureau.

[1] Normals are based on records of 30 or more years of observations.

TABLE 508.—*Precipitation: Normal* [1] *and 1926, by months, at selected points in the United States*

Station	January		February		March		April		May		June	
	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926
	In.	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*
Greenville, Me	2.83	3.37	2.97	3.45	3.16	2.31	2.93	2.63	3.31	1.69	3.81	3.00
Boston, Mass	3.82	2.53	3.44	5.56	4.98	2.91	3.55	1.73	3.51	3.31	3.08	1.33
Buffalo, N. Y	3.30	2.58	2.85	2.18	2.62	2.14	2.45	3.93	3.10	1.11	3.14	2.80
Canton, N. Y	3.16	1.55	2.57	1.71	2.84	3.76	2.26	3.14	2.85	1.34	3.48	4.15
Trenton, N. J	3.17	2.25	3.19	3.92	4.04	2.22	3.29	2.01	3.52	3.00	3.49	2.46
Pittsburgh, Pa	2.87	2.85	2.66	3.47	3.01	1.73	2.90	1.46	3.30	2.10	3.89	1.20
Scranton, Pa	2.80	2.09	2.72	3.61	3.12	1.93	2.65	2.20	3.44	1.66	3.57	2.65
Cincinnati, Ohio	3.36	2.65	3.24	3.35	3.64	2.56	2.95	4.99	3.52	4.65	3.98	2.61
Cleveland, Ohio	2.45	1.78	2.61	2.53	2.79	1.95	2.31	3.44	3.22	1.48	3.68	2.58
Evansville, Ind	3.70	3.49	3.29	2.22	4.28	2.69	3.93	2.39	3.83	.97	4.07	1.09
Indianapolis, Ind	2.81	2.72	3.08	2.75	4.01	3.12	3.47	3.91	3.94	3.59	4.31	1.28
Chicago, Ill	2.00	1.35	2.16	2.92	2.55	3.14	2.88	1.96	3.37	2.73	3.66	7.62
Peoria, Ill	2.20	1.39	2.69	2.42	2.96	2.35	3.28	2.60	4.26	2.18	4.30	5.63
Grand Rapids, Mich	2.52	1.77	2.19	2.93	2.53	1.99	2.65	1.99	3.38	3.44	3.80	2.66
Marquette, Mich	2.04	.89	1.72	1.36	2.08	3.11	1.99	1.50	3.32	1.07	3.51	2.62
Madison, Wis	1.56	.76	1.47	1.88	2.21	1.09	2.38	1.49	3.62	3.75	4.10	2.16
Duluth, Minn	.98	.49	.99	1.02	1.55	1.86	2.14	.48	3.47	1.49	4.53	3.93
St. Paul, Minn	.90	.97	.84	.54	1.60	1.46	2.33	.53	3.62	1.87	4.41	3.65
Des Moines, Iowa	1.21	.95	1.08	.82	1.65	1.82	2.98	.82	4.56	2.11	4.96	6.11
Dubuque, Iowa	1.49	1.40	1.38	1.14	2.21	1.15	2.92	2.24	4.32	2.47	4.55	3.76
St. Louis, Mo	2.27	1.69	2.75	2.52	3.48	3.95	3.52	4.42	4.24	1.58	4.47	1.72
Springfield, Mo	2.66	2.28	2.27	1.15	4.07	2.51	3.86	1.07	5.55	4.50	5.19	3.97
Bismarck, N. Dak	.54	.54	.50	.35	1.04	T.	1.88	.11	2.50	2.69	3.54	1.81
Devils Lake, N. Dak	.60	.16	.53	.25	1.01	.45	2.03	.49	2.29	1.68	3.53	1.74
Pierre, S. Dak	.46	1.31	.44	.10	1.33	.03	1.98	.15	2.13	3.32	3.08	1.86
North Platte, Nebr	.47	.22	.40	.12	.87	.54	2.15	.56	3.06	.91	3.25	3.86
Omaha, Nebr	.65	.98	.76	.77	1.39	.90	3.01	.41	4.50	1.87	5.05	2.01
Concordia, Kans	.72	.59	.75	.97	1.48	.88	2.42	1.00	4.70	1.93	4.97	2.97
Dodge City, Kans	.47	.36	.71	.97	.88	2.27	1.87	1.17	3.34	2.42	3.82	2.44
Iola, Kans	1.45	1.84	1.47	1.10	2.88	1.90	3.99	2.70	5.28	2.76	5.46	4.06
Washington, D. C	3.87	3.60	3.42	4.17	3.85	2.07	3.25	.79	3.83	2.22	4.18	1.66
Lynchburg, Va	3.72	3.89	3.49	3.59	3.81	2.52	3.17	1.82	3.99	.44	3.89	1.13
Norfolk, Va	3.37	4.52	3.75	2.50	4.28	3.11	3.79	2.45	4.07	1.89	4.33	2.69
Parkersburg, W. Va	3.19	3.71	3.24	3.60	3.82	2.49	2.91	1.76	3.46	1.41	4.65	4.85
Charlotte, N. C	4.29	5.47	4.39	4.06	4.57	4.80	3.44	1.28	3.92	2.40	4.46	3.29
Charleston, S. C	3.45	5.02	3.41	3.03	3.72	3.61	2.99	2.48	3.47	2.33	5.39	5.65
Atlanta, Ga	5.31	7.31	4.65	4.46	5.78	4.97	3.63	.96	3.09	.89	3.88	4.21
Thomasville, Ga	4.13	8.89	4.48	6.81	5.09	5.55	3.65	3.49	4.01	2.69	4.72	3.52
Jacksonville, Fla	3.12	4.89	3.43	1.66	3.52	2.20	2.72	3.89	4.25	1.66	5.53	9.33
Miami, Fla	2.73	7.93	2.13	.29	2.61	.28	3.33	2.29	6.48	4.63	7.13	3.24
Memphis, Tenn	5.21	4.73	4.35	2.76	5.77	5.79	4.83	1.67	4.34	1.20	4.37	1.44
Nashville, Tenn	4.85	4.48	4.32	2.06	5.44	3.88	4.36	2.45	3.50	2.15	4.37	2.17
Birmingham, Ala	5.32	6.60	4.75	3.23	5.76	4.88	3.67	1.77	3.09	4.31	3.88	5.51
Mobile, Ala	4.85	9.49	5.36	7.06	7.17	9.42	4.35	3.69	4.00	1.77	5.95	5.04
New Orleans, La	4.63	6.10	4.47	3.02	5.30	15.95	4.91	6.39	3.88	13.66	6.16	3.70
Shreveport, La	4.42	3.05	3.61	1.89	4.52	6.17	4.58	5.14	4.16	3.61	3.58	2.97
Amarillo, Tex	.60	.48	.88	.06	.65	1.67	1.72	3.74	3.67	3.98	2.99	3.17
Brownsville, Tex	1.35	2.72	1.27	.02	1.23	1.96	1.33	2.97	2.22	2.89	2.37	3.35
El Paso, Tex	.51	.54	.46	.17	.38	1.49	.23	1.11	.35	.70	.55	.11
Fort Worth, Tex	1.51	4.04	1.52	.08	2.18	3.60	4.12	3.73	4.36	3.79	3.08	3.32
Galveston, Tex	3.62	4.36	3.10	1.27	2.90	9.39	3.13	5.49	3.23	4.08	4.75	1.53
San Antonio, Tex	1.68	3.42	1.78	.08	1.68	4.77	2.94	7.06	2.96	3.33	3.11	3.57
Oklahoma City, Okla	1.34	2.13	.98	.04	2.38	1.81	2.80	2.66	5.75	2.09	3.07	3.77
Little Rock, Ark	4.79	4.42	4.18	3.52	4.94	5.11	4.51	3.11	5.10	1.56	4.09	1.47
Havre, Mont	.69	.38	.47	.27	.48	.14	1.01	.12	2.09	1.14	2.82	2.23
Kalispell, Mont	1.34	1.15	1.05	.63	1.06	.20	.82	.21	1.71	1.23	1.98	1.20
Cheyenne, Wyo	.40	.88	.56	.61	.95	1.04	1.85	1.27	2.43	1.75	1.57	4.73
Sheridan, Wyo	.90	1.05	.74	.64	1.22	.94	1.67	.45	2.68	3.05	1.90	1.67
Pueblo, Colo	.35	.83	.47	.01	.86	1.10	1.43	.94	1.68	1.64	1.47	.83
Santa Fe, N. Mex	.59	.45	.84	.28	.73	1.31	.80	.82	1.11	3.14	1.04	.32
Phoenix, Ariz	1.17	1.00	.69	.10	.49	1.63	.43	3.36	.03	.18	.12	T.
Modena, Utah	.91	.38	1.15	.77	1.16	.96	.83	2.35	.85	.31	.30	.06
Salt Lake City, Utah	1.35	1.21	1.38	2.45	2.00	.60	2.26	1.61	1.95	2.10	.77	.21
Winnemucca, Nev	1.04	.55	.93	1.49	.95	.05	.88	1.07	1.03	.53	.64	.30
Boise, Idaho	1.89	.70	1.42	2.42	1.44	.51	1.18	1.09	1.29	1.09	.88	.16
Seattle, Wash	4.74	4.67	3.67	2.99	2.72	.85	2.42	1.00	1.84	1.83	1.38	.40
Walla Walla, Wash	2.01	1.48	1.58	2.14	1.89	.92	1.70	.53	1.83	1.05	1.19	1.18
Portland, Oreg	6.59	3.64	5.42	7.71	4.66	.80	3.02	.80	2.23	2.83	1.64	.35
Roseburg, Oreg	5.70	3.87	4.50	6.79	3.96	.06	2.48	1.29	2.05	1.74	1.07	.45
Eureka, Calif	7.63	4.69	7.03	6.64	6.97	.07	3.93	.94	2.54	1.13	1.06	T.
Fresno, Calif	1.60	.96	1.33	.99	1.76	.01	.71	3.90	.63	.03	.10	.04
Los Angeles, Calif	2.84	3.06	2.91	2.70	3.00	.22	1.13	7.53	.48	.18	.07	T.
Sacramento, Calif	3.69	3.20	3.14	5.52	3.01	.05	2.00	4.25	.98	.38	.15	.00
San Diego, Calif	2.00	.78	1.96	2.33	1.70	.82	.74	5.37	.41	.01	.08	.01
San Francisco, Calif	4.33	5.48	3.70	5.40	3.14	.25	1.82	5.26	.81	.15	.17	T.

T. = Trace, indicates an amount too small to measure.

[1] Normals are based on records of 20 or more years of observations.

TABLE 568.—*Precipitation: Normal*[1] *and 1926, by months, at selected points in the United States*—Continued

Station	July		August		September		October		November		December		Annual	
	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926	Normal	1926
	In.	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*
Greenville, Me	4.93	1.23	3.55	2.72	3.83	3.47	3.28	3.87	2.99	5.38	3.29	2.85	40.88	35.97
Boston, Mass	3.36	6.06	4.03	3.91	3.19	1.08	3.86	3.58	4.10	4.07	3.41	3.96	43.38	40.03
Buffalo, N. Y	3.40	2.17	2.90	4.73	3.18	4.43	3.53	6.16	3.35	4.05	3.37	4.62	37.28	40.85
Canton, N. Y	3.23	3.40	2.69	4.11	2.81	3.85	3.34	4.63	3.41	3.95	3.59	2.15	36.18	37.74
Trenton, N. J	4.77	5.15	5.37	7.73	3.59	4.57	3.41	4.09	3.43	4.79	3.16	3.00	44.43	45.19
Pittsburgh, Pa	4.42	1.72	3.18	2.95	2.48	7.45	2.36	4.12	2.55	3.27	2.73	3.12	36.35	35.44
Scranton, Pa	3.83	2.47	4.25	6.60	2.86	3.80	2.91	3.72	2.29	4.69	2.61	2.06	37.05	37.48
Cincinnati, Ohio	3.54	10.02	3.33	6.52	2.31	4.10	2.32	4.49	3.21	1.45	2.93	2.47	38.33	49.86
Cleveland, Ohio	3.55	2.86	3.15	4.79	3.22	9.10	2.73	6.75	2.75	2.56	2.58	2.01	35.04	41.83
Evansville, Ind	3.58	.80	3.46	6.44	3.19	3.42	2.74	4.03	3.80	3.75	3.49	2.63	43.36	33.92
Indianapolis, Ind	4.13	3.78	3.38	4.97	3.05	9.33	2.79	2.68	3.52	1.67	3.04	1.95	41.48	41.75
Chicago, Ill	3.64	3.21	2.88	.99	3.02	5.03	2.55	1.67	2.50	3.97	2.07	.87	33.28	35.46
Peoria, Ill	2.97	5.94	2.93	6.79	3.12	11.55	2.57	2.62	2.64	5.41	2.37	1.12	36.29	50.00
Grand Rapids, Mich	3.04	2.93	2.60	2.64	3.46	4.80	2.87	3.04	2.70	3.55	2.54	1.86	34.27	33.60
Marquette, Mich	3.10	4.46	2.86	3.33	3.51	6.48	3.19	2.88	2.79	5.75	2.52	2.36	32.63	35.81
Madison, Wis	3.99	3.26	3.21	1.12	3.18	6.54	2.42	2.83	1.80	3.63	1.77	1.82	31.71	30.33
Duluth, Minn	3.65	1.84	3.53	3.61	3.55	5.51	2.74	2.81	1.58	1.62	1.22	1.25	29.93	25.91
St. Paul, Minn	3.40	2.92	3.46	4.27	3.42	5.43	2.34	2.35	1.30	2.12	1.06	1.73	28.68	27.34
Des Moines, Iowa	3.86	3.69	3.61	2.95	3.07	10.25	2.68	.73	1.48	2.13	1.31	.67	32.45	32.85
Dubuque, Iowa	4.30	5.89	3.04	1.85	3.59	5.48	2.68	1.48	1.81	3.24	1.72	.99	34.01	31.09
St. Louis, Mo	3.43	.54	2.66	1.83	2.91	7.40	2.41	3.84	2.88	2.71	2.23	1.15	37.20	33.35
Springfield, Mo	4.79	1.02	4.31	6.63	3.76	8.33	2.80	4.14	2.64	2.96	2.67	1.92	44.57	40.48
Bismarck, N. Dak	2.14	1.84	1.98	1.34	1.19	2.31	1.03	.23	.68	.51	.62	.64	17.64	12.37
Devils Lake, N. Dak	3.78	1.65	2.76	1.90	1.39	2.87	1.23	.97	.71	.69	.39	.43	20.16	13.28
Pierre, S. Dak	2.35	3.93	2.01	.78	1.11	.74	.81	2.61	.43	.38	.50	.23	16.63	15.44
North Platte, Nebr	2.68	2.68	2.46	2.80	1.50	1.21	1.15	.83	.40	.33	.47	.28	18.86	14.37
Omaha, Nebr	4.33	3.13	3.62	2.65	3.03	8.85	2.35	.23	1.06	2.96	.91	1.20	30.66	25.96
Concordia, Kans	3.62	2.56	2.81	1.42	2.58	4.68	2.00	.98	.94	1.48	.48	.53	27.47	19.99
Dodge City, Kans	3.38	3.76	2.59	1.65	1.77	3.08	1.40	.10	.55	1.29	.56	.48	20.84	19.99
Iola, Kans	4.42	2.73	3.62	6.41	3.86	14.21	2.69	6.13	1.45	1.28	1.06	1.56	37.63	46.68
Washington, D. C	4.65	4.20	4.40	5.50	3.59	6.80	3.09	4.23	2.71	5.29	3.16	3.02	43.56	43.55
Lynchburg, Va	4.03	2.71	4.25	1.67	3.63	1.59	3.38	3.16	2.79	3.43	3.27	4.99	43.42	30.94
Norfolk, Va	5.80	1.03	5.97	5.73	4.06	2.17	3.91	1.65	2.72	2.59	3.49	4.72	49.54	34.85
Parkersburg, W. Va	4.66	7.38	3.53	5.75	2.72	5.41	2.44	4.18	2.83	2.46	2.77	2.97	40.22	45.97
Charlotte, N. C	5.49	3.96	5.55	5.52	3.22	.05	3.15	.64	2.86	2.87	3.86	3.86	49.20	38.20
Charleston, S. C	7.26	4.29	6.97	2.38	5.46	2.66	3.93	.85	2.87	1.90	3.15	.92	52.07	35.12
Atlanta, Ga	4.73	4.49	4.48	7.75	3.53	1.20	2.34	1.68	3.40	3.75	4.54	5.06	49.36	46.73
Thomasville, Ga	5.32	7.06	5.03	6.59	4.25	9.43	3.46	1.54	2.64	4.02	3.69	1.27	50.47	60.86
Jacksonville, Fla	6.20	10.81	6.21	3.18	8.03	9.55	5.06	2.22	2.19	3.37	2.99	1.58	53.25	54.34
Miami, Fla	6.17	15.22	6.42	9.69	8.72	12.10	8.96	6.92	2.84	1.84	2.00	.23	59.52	64.66
Memphis, Tenn	3.51	2.19	3.20	4.40	3.05	.43	2.74	3.64	4.59	4.23	4.38	9.50	50.34	41.98
Nashville, Tenn	4.35	3.68	3.47	8.30	3.68	2.52	2.48	4.64	3.85	4.64	3.82	13.53	48.49	54.50
Birmingham, Ala	4.70	2.45	4.48	3.51	3.59	1.65	2.34	1.12	3.39	5.04	4.60	10.61	49.48	50.68
Mobile, Ala	7.04	5.93	6.81	9.01	5.02	10.62	3.18	1.64	3.74	8.40	4.57	1.65	62.04	73.72
New Orleans, La	6.47	4.20	5.61	7.25	4.81	6.01	2.93	1.48	3.79	2.92	4.46	2.18	57.42	75.86
Shreveport, La	3.72	6.57	2.24	2.21	3.22	1.01	3.18	4.76	4.08	2.42	4.37	9.20	45.68	49.00
Amarillo, Tex	3.17	2.27	2.81	1.76	2.36	5.72	1.71	2.15	1.16	.29	.83	.96	22.55	26.25
Brownsville, Tex	1.88	3.81	2.59	1.84	5.42	4.27	3.22	2.68	2.06	.30	1.52	5.62	26.46	32.43
El Paso, Tex	2.13	3.31	1.72	.27	1.45	2.24	.95	.89	.59	.15	.52	.75	9.84	11.73
Fort Worth, Tex	2.57	4.13	2.72	4.39	2.46	1.41	2.69	3.16	2.57	.73	1.84	3.03	31.62	35.41
Galveston, Tex	3.98	5.00	5.01	.92	5.41	3.89	4.18	2.02	4.02	1.81	3.73	4.37	47.06	44.13
San Antonio, Tex	2.22	1.37	2.69	.31	2.94	.43	1.49	1.82	1.78	1.99	1.56	2.24	26.83	30.39
Oklahoma City, Okla	3.65	6.69	3.17	1.23	2.75	9.56	1.81	3.25	2.25	.83	1.74	3.79	31.69	37.85
Little Rock, Ark	3.99	3.42	3.65	3.99	3.26	1.19	2.55	3.99	4.59	3.16	4.24	9.46	49.89	44.40
Havre, Mont	1.92	.66	1.26	2.41	1.03	2.57	.50	.04	.77	1.17	.63	.40	13.67	11.53
Kalispell, Mont	1.15	.20	1.01	2.23	1.47	2.14	.94	.67	1.54	2.01	1.14	1.48	15.21	13.35
Cheyenne, Wyo	1.99	2.91	1.47	1.53	.94	.37	.72	1.22	.41	.52	.31	.77	13.60	17.60
Sheridan, Wyo	1.04	.97	.73	.74	1.34	2.95	1.02	.95	.59	1.22	.60	.49	14.43	15.12
Pueblo, Colo	1.97	2.31	1.57	.65	.62	.36	.70	.54	.37	.07	.46	.72	11.95	11.00
Santa Fe, N. Mex	2.71	1.13	2.36	1.50	1.64	1.49	1.07	.94	.78	.13	.76	1.46	14.49	12.97
Phoenix, Ariz	1.07	1.31	.96	.11	1.01	3.52	.35	.07	.96	.01	.59	2.68	7.87	13.97
Modena, Utah	1.45	.52	1.37	.76	1.10	.06	.94	T.	.53	.70	.58	.77	11.19	7.64
Salt Lake City, Utah	.54	1.21	.78	1.22	.85	.97	1.40	.71	1.42	1.85	1.33	1.47	16.03	15.61
Winnemucca, Nev	.17	.14	.17	T.	.34	.00	.52	.05	.74	1.30	.99	.76	8.40	6.24
Boise, Idaho	.18	.21	.16	.77	.41	.10	1.28	.01	.86	3.21	1.72	1.38	12.71	11.65
Seattle, Wash	.62	.01	.62	1.74	1.69	.60	2.69	3.06	5.33	4.94	5.39	4.03	33.11	26.12
Walla Walla, Wash	.39	.01	.45	1.53	.93	.56	1.47	2.58	2.13	3.94	2.10	1.98	17.67	17.90
Portland, Oreg	.62	.00	.63	1.95	1.84	2.14	3.28	5.26	6.41	9.78	6.90	5.91	43.24	41.17
Roseburg, Oreg	.32	.00	.33	1.68	1.04	.68	2.61	2.78	4.37	8.59	5.92	4.17	34.43	32.10
Eureka, Calif	.11	.01	.10	.54	1.11	.43	2.65	3.49	5.67	13.65	7.25	6.47	46.05	38.06
Fresno, Calif	.00	.00	.00	T.	.27	.00	.72	.30	1.03	2.61	1.53	.58	9.68	9.42
Los Angeles, Calif	.00	T.	.00	T.	.06	.00	.77	.27	1.48	3.45	2.90	1.15	15.64	18.56
Sacramento, Calif	.00	.00	.01	T.	.39	T.	1.04	2.14	2.15	4.48	3.53	.58	20.09	20.58
San Diego, Calif	.00	T.	.00	.05	.06	.00	.46	.21	.83	.59	1.82	3.89	10.01	14.06
San Francisco, Calif	.01	.00	.00	.04	.29	T.	1.29	1.90	2.47	7.21	4.24	1.04	22.27	26.73

Weather Bureau.
T.=Trace, indicates an amount too small to measure.
[1] Normals are based on records of 20 years or more of observations.

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